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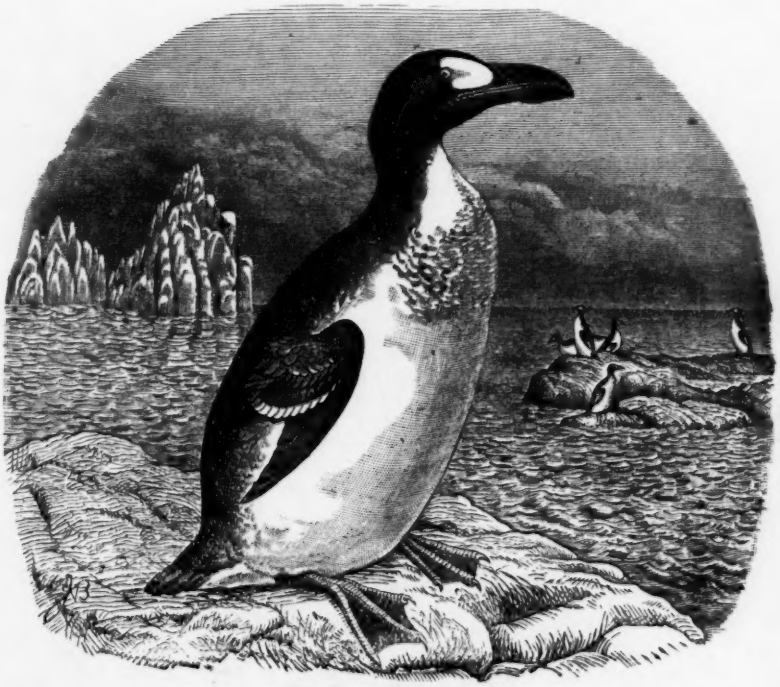

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CONTENTS OF VOLUME XVII.

NUMBER I.

PAGE.

THE LITTLE BLACK RAIL. By *J. A. Allen*. (Plate I.) . . . 1
THE RUFOUS HUMMINGBIRDS OF CAPE DISAPPOINTMENT. By *William H. Kobbé*. 8
ON THE PERFECTED PLUMAGE OF THE KING EIDER (*Somateria spectabilis*). By *Arthur H. Norton*. 16
RANGES OF *Hylocichla fuscescens* AND *Hylocichla fuscescens salicicola* IN NORTH AMERICA. By *Reginald Heber Howe, Jr.* . . . 19
A NEW WREN FROM ALASKA. By *Harry C. Oberholser*. . . 25
NEW SPECIES, ETC., OF AMERICAN BIRDS. — V. CORVIDÆ. (Concluded.) By *Robert Ridgway*. 27
NEW SPECIES, ETC., OF AMERICAN BIRDS. — VI. FRINGILLIDÆ. (Supplement.) By *Robert Ridgway*. 29
THE CONDITIONS GOVERNING BIRD LIFE IN ARIZONA. By *Herbert Brown*. 31
THE MOULT OF NORTH AMERICAN TETRAONIDÆ (QUAILS, PARTRIDGES, AND GROUSE). By *Jonathan Dwight, Jr., M. D.* . 34
REPORT OF THE A. O. U. COMMITTEE ON PROTECTION OF NORTH AMERICAN BIRDS. By *Witmer Stone*. 51
SEVENTEENTH CONGRESS OF THE AMERICAN ORNITHOLOGISTS' UNION. By *John H. Sage*. 58

GENERAL NOTES.

A Rare Record for Eastern Long Island, 63; Some Notes on the Herring Gull (*Larus argentatus*), 63; The Occurrence of the Egyptian Goose in North America, 64; The Occurrence of Steller's Eider (*Eniconetta stelleri*) in the Gulf of St. Lawrence, 65; *Pipile* vs. *Pipilo*, 65; *Strix* vs. *Aluco*, 65; The 'Churca' (*Geococcyx californianus*), 66; The Red-headed Woodpecker near Chicago, Ill., 67; Tree Swallows by the Million, 67; Intelligence of the Shrike, 68; The Bohemian Waxwing in Onondaga County, N. Y., 68; Date of Discovery and Type Locality of the Mountain Mockingbird, 68; Notes on Birds of Long Island, 69; Newfoundland Notes, 71.

RECENT LITERATURE.

Merriam's Biological Survey of Mount Shasta, 73; Palmer's 'The Avifauna of Pribilof Islands,' 74; Howe and Sturtevant's 'Birds of Rhode Island,' 76; Newton's 'Dictionary of Birds,' 77; Cory's

'The Birds of Eastern North America. Part II. Land Birds,' 78; Avium Generum Index Alphabeticus, 78; Sharpe's 'Hand-List of the Genera and Species of Birds,' 79; Dubois's 'Synopsis Avium,' 81; Salvadori and Festa on Birds of Ecuador, 81; Bangs on Birds from the Sierra Nevada de Santa Marta, Colombia, 82; Pearson's Preliminary List of Birds of Chapel Hill, N. C., 82; Kellogg's List of Biting Lice (Mallophaga) taken from North American Birds and Mammals, 82; Thompson on the Cranial Osteology of the Parrots, 84; Lange's 'Our Native Birds, How to Protect Them and Attract Them to Our Homes,' 84; Macpherson's 'History of Fowling,' 85; Mrs. Wright's 'Wabeno, the Magician,' 86; Bumpus on the 'Elimination of the Unfit,' 87; Whitman on 'Animal Behavior,' 87; Publications Received, 89.

NOTES AND NEWS.

Obituary, Dr. Elliott Coues, 91; Dr. D. Webster Prentiss, 91; W. W. Colburn, 92; A Research Fund for Ornithology, 92; New Publications, 93; Ornithological Journals, 93; Bird Destruction for Millinery Purposes, 94; Alleged Sources of Egret Plumes, 95.

NUMBER II.

PAGE

THE IVORY-BILLED WOODPECKER IN LOUISIANA. By *Geo. E. Beyer.* 97

CARE OF NEST AND YOUNG. By *Francis H. Herrick.* (Plates II and III.) 100

NOTES ON SOME OF THE BIRDS OF BRITISH COLUMBIA. By *Allan Brooks.* 104

ARGUMENT AGAINST THE BANNER MARK THEORY. By *Abbot H. Thayer.* 108

DESCRIPTION OF THREE NEW BIRDS FROM ALASKA. By *Louis B. Bishop, M.D.* 113

DESCRIPTION OF A NEW SUBSPECIES OF *Meleagris gallopavo* AND PROPOSED CHANGES IN THE NOMENCLATURE OF CERTAIN NORTH AMERICAN BIRDS. By *E. W. Nelson.* 120

A REVIEW OF THE THREE-TOED WOODPECKERS OF NORTH AMERICA. By *Outram Bangs.* 126

THE MOULT OF THE NORTH AMERICAN TETRAONIDÆ (QUAILS, PARTRIDGES, AND GROUSE). By *Jonathan Dwight, Jr.* (Plates IV and V.) (Concluded from p. 51.) 143

FURTHER NOTES ON LACÉPÈDE'S 'TABLEAUX.' By *Charles W. Richmond.* 166

GENERAL NOTES.

Note on the Genus *Micruria*, 168; Some Notes on the Herring Gull (*Larus argentatus*), 169; Ring-billed Gull in New Hampshire, 160; The Cinnamon Teal in Louisiana, 170; An Interesting Hybrid, 170; The Roseate Spoonbill in Kansas, 171; Breeding of the Little Black Rail (*Porzana jamaicensis*) at Raleigh, North

Carolina, 171; Breeding of the Little Black Rail (*Porzana jamaicensis*) in New Jersey in 1844 and 1845, 172; Occurrence of *Tringa fuscicollis* in Virginia in Autumn, 172; A Further Note on the Specific name of *Falco regulus*, 173; The Arctic Three-toed Woodpecker in Beverly, Mass., 173; The Earliest Name for the Roadrunner, 173; The Red-Headed and Other Woodpeckers in Michigan in Winter, 174; The Flicker Wintering in Montreal, 174; Chuck-will's Widow in Kansas, 175; *Otocoris alpestris praticola* at Ipswich, Mass., 175; The Red Crossbill unusually common at Portland, Maine, in Summer, 175; White-winged Crossbills in Rhode Island, 175; White-winged Crossbills and Brünnich's Murres in Central New Hampshire, 175; Ontario Bird Notes, 176; New Brunswick Notes, 177; Bird News from Central New York, 177; Some Necessary Changes in Nomenclature, 178; An Interesting Bit of Manuscript, 179.

RECENT LITERATURE.

Keeler's 'Bird Notes Afield,' 180; Russell on Birds of the Northwest Territory, 181; Loomis on California Water Birds, 182; Stone on Summer Molting Plumage of Certain Ducks, 163; Stone on a New Race of Short-eared Owl, 184; Bangs on Colombian Birds, 184; Chapman on New Birds from Venezuela, etc., 184; Chapman on Birds from Greenland, 185; Oberholser on the Flammulated Screech Owls, 186; Oberholser on a Collection of Birds from Liberia, 186; New Birds from the Bahamas, 187; Kopman on the Bird Fauna of Two Sections of Louisiana, 187; Faxon and Hoffman's Birds of Berkshire County, Mass., 187; 'Birds in Horticulture,' 188; Stark's Birds of South Africa, 189; Publications Received, 190.

NOTES AND NEWS.

Obituary: — George B. Sennett, 193; W. E. Brooks, 194; Francis C. Browne, 194; John A. Dakin, 196; Foster A. Brackett, 197; Delaware Valley Ornithological Club, 197; Bequest to the Pennsylvania Audubon Society, 198; Recent Bird Protection Work, 198.

NUMBER III.

Occurrence of *Larus glaucescens* and other American Birds in Hawaii. By *H. W. Henshaw* 201

Notes on the Breeding Habits of the American Golden-eyed Duck or Whistler (*Clangula clangula americana*). By *William Brewster*. (Plates VI and VII.) 207

Ecology of the Maryland Yellow-throat, and its Relatives. By *William Palmer* 216

Notes on a Few Species of Idaho and Washington Birds. By *John O. Snyder* 242

Description of a new Shearwater from the Hawaiian Islands. By *H. W. Henshaw* 246

Nesting Habits of the Pacific Coast Species of the Genus *Puffinus*. By *A. W. Anthony*. (Plate VIII.) 247

DESCRIPTIONS OF THIRTY NEW NORTH AMERICAN BIRDS, IN THE BIOLOGICAL SURVEY COLLECTION. By *E. W. Nelson* . . . 253
A NEW SUBSPECIES OF THE GENUS *Hylocichla*. By *Reginald Heber Howe, Jr.* 270
AN ACCOUNT OF THE NESTING HABITS OF FRANKLIN'S ROSY GULL (*Larus franklinii*), AS OBSERVED AT HERON LAKE IN SOUTHERN MINNESOTA. By *Thomas S. Roberts, M. D.* (Plates IX–XI.) 272
NOTES ON A COLLECTION OF BAHAMA BIRDS. By *Outram Bangs.* 283

GENERAL NOTES.

The Red-necked Grebe in Michigan in Winter, 293; The Dovekie (*Alle alle*) on the Coast of Virginia, 293; The American Egret in Connecticut, 294; Notes on the Nesting of the Blue-throated Hummingbird, 294; Evening Grosbeak (*Coccothraustes vespertinus*), 294; Feeding Habits of the Pine Siskin, 295; Large Flight of White-winged Crossbills on Long Island, N. Y., 295; The Lark Finch and Baird's Bunting on Long Island, N. Y., 296; Bachman's Sparrow in Virginia, 296; Louisiana and Mississippi Bird Notes, 297; Seven New Birds for Colorado, 298; Bird Notes from Sao Paulo, Brazil, 298; Sanitary Habits of Birds, 299.

RECENT LITERATURE.

Rothschild and Hartert's 'Review of the Ornithology of the Galapagos Islands,' 300; Salvadori and Festa on Birds of Ecuador, 303; Oberholser on Birds from Centra Asia, 304; Oberholser on a Collection of Birds from Madagascar, 304; Oberholser on Birds from Santa Barbara Islands, 304; Van Denburg's Notes on Birds of Santa Clara County, California, 305; Bonhote's List of the Birds of New Providence, Bahamas, 305; Richmond on New Species of Birds, 305; Bangs on a New Quail-Dove from Colombia, 306; Dugmore's 'Bird-Homes,' 306; Pearson's 'Beyond Petsora Eastward,' 307; Collett and Nansen's Birds of the Norwegian North Polar Expedition, 308; Stone on the McIlhenny Collection, 301; Jones on Warblers' Songs, 311; Proceedings of the Nebraska Ornithologists' Union, 311; Chapman's 'Bird Studies with a Camera,' 312; Farr's Check-List of New York Birds, 313; Palmer on Legislation for the Protection of Birds,' 314; Publications Received, 315.

CORRESPONDENCE.

Formaldehyde as an Aid in Collecting Ornithological Specimens, 318.

NOTES AND NEWS.

Obituary:— Professor Alphonse Milne-Edwards, 320; Edgar Leopold Layard, 321; Percy S. Selous, 321; College of Forestry Lectures, Cornell University, 322; Fiftieth Anniversary of the German Ornithological Society, 322; The Outlook for Bird Protection in North America, 323; Errata, 324.

NUMBER IV.

PAGE

A NUPTIAL PERFORMANCE OF THE SAGE COCK. By *Frank Bond.* (Plate XII.) 325

'APTOSOCHROMATISM.' By *J. A. Allen* 327

NOTES ON THE BIRDS OF REFUGIO COUNTY, TEXAS. By *James J. Carroll* 337

THE BIRDS OF CAPE DISAPPOINTMENT, WASHINGTON. By *William H. Kobbé* 349

NESTING HABITS OF THE CERULEAN WARBLER. By *W. E. Saunders* 358

NORTH AMERICAN BIRDS COLLECTED AT SANTA MARTA, COLOMBIA. By *J. A. Allen* 363

THE MOULT OF THE NORTH AMERICAN SHORE BIRDS (*Limicolæ*). By *Dr. Jonathan Dwight, Jr.* 368

GENERAL NOTES.

Occurrence of the Little Blue Heron in Labrador, 386; The Marbled Godwit at Pine Point, Maine, 386; The Swallow-tailed Kite at Piermont, N. Y., 386; The Western Red-tail at Toronto, Canada, 386; Description of the Nesting Plumage of *Falco islandus*, 387; Prairie Horned Larks Nesting in Maine, 387; The European Linnet in Westchester County, N. Y., 388; The Rough-winged Swallow Breeding in Connecticut, 389; The Proper Name for the Florida Yellow-throat, 389; The Mockingbird at Barnegat, N. J., and on Long Island, N. Y., 390; Brief Michigan Notes, 390; List of the Rarer Birds met with during the Spring of 1900 in the Immediate Vicinity of Toronto, 391.

RECENT LITERATURE.

Beyer's 'The Avifauna of Louisiana,' 392; Burns's 'A Monograph of the Flicker,' 393; Nash's Check-List of the Birds of Ontario,' 394; Macoun's 'Catalogue of Canadian Birds,' 394; Proceedings of the Delaware Valley Ornithological Club, 395; Cooke's 'Further Notes on the Birds of Colorado,' 396; 'Economic Ornithology,' 396; Meyer and Wigelsworth's 'Birds of Celebes,' 399; Publications Received, 401.

CORRESPONDENCE.

Habits of the Goony, and Notes on Variability of Birds' Songs, 403.

NOTES AND NEWS.

Announcement respecting 'The Auk,' 404; Eighteenth Annual Congress of the A. O. U., 404; Notice of the death of C. C. Marble, 404; Ridgway's 'Birds of North and Middle America,' 404 New Onithological Publications, 405.

INDEX 407
ERRATA 424
Title Page and Contents . . . . . i–viii
Officers and Committees of the A. O. U. ix
Members of the A. O. U . . . . . x–xxx

LIST OF PLATES IN VOLUME XVII.

Plate I. Black Rail (*Porzana jamaicensis*).
" II. Robin cleaning Nest.
" III. Bluebird cleaning Nest.
" IV. Ptarmigan Feathers.
" V. Down Feathers of Quail and Ptarmigan.
" VI. Fig. 1, Young Whistler, two days old; Fig. 2, Whistler's Nest.
" VII. Whistler's Nests.
" VIII. Nesting Colony of Wedge-tailed Petrels (*Puffinus cuneatus*).
" IX. Franklin's Gull on Nest.
" X. Fig. 1, Distant View of a portion of Nesting Site of Franklin's Gull Colony at Heron Lake, Minn.; Fig. 2, Pair of Franklin's Gulls on a Floating Nest.
" XI. Fig. 1, A Pair of Franklin's Gulls with four Chicks; Fig. 2, Scene at the Franklin's Gull Colony, Heron Lake, Minn.
" XII. Nuptial Performance of the Sage Cock.

A. Hoen & Co. Lithocaustic, Baltimore.

BLACK RAIL.

PORZANA JAMAICENSIS (GMEL.)

NATURAL SIZE.

THE AUK:

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ORNITHOLOGY.

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BY J. A. ALLEN.

Plate I.

ALTHOUGH the Little Black Rail (*Porzana jamaicensis*) was first made known in 1760, and received its technical christening at the hands of Gmelin in 1788 (Syst. Nat. I, 718), it still remains one of the least known members of its family, and one of the rarest of North American birds in collections. Its entrance into natural history literature was nearly simultaneous in three distinct publications, all dated 1760. Dr. Patrick Browne in his 'Natural History of Jamaica,' gives, on page 479, a brief diagnosis of it in Latin, and adds that this "species has never been described before; it is a very beautiful little bird, and very naturally pictured by Mr. Edwards, in a book with which he intends to favor the public soon."

Mr. Edwards, in his 'Gleanings of Natural History' (Vol. II, 1760, p. 142, pl. 278) describes this little Rail as 'The Least Water-Hen,' and gives of it a very good colored figure. On the same plate is a colored figure of 'The Yellow Wren' (*Dendroica jamaicensis*). He says: "These birds were engraved on the plate immediately from nature, and are both drawn the size of life. The lower bird represents the Water-Hen." And then follows

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an excellent and very detailed description of it, following which he says: "These birds were brought from the island of Jamaica by Dr. Browne. The Water-Hen is called Biddy-biddy by the natives of the island in imitation of the noise it makes. I believe this bird hath till now been unknown: there is nothing like it in Sloane's Jamaica .... See Dr. Browne's account of the least Water-Hen in his history of Jamaica, pa. 479."

Brisson's account (Orn., VI, Suppl., p. 140, also dated 1760) is based entirely on Browne and Edwards, as likewise is Gmelin's, who quotes in addition, however, Buffon and Latham, whose accounts are also based on Browne and Edwards. The accounts of Vieillot (Nouv. Dict. d'Hist. Nat., XXVIII, p. 550) in 1819, and Stephens (Gen. Zoöl., XII, pt. 1, p. 221) in 1824, and of other compilers up to 1838, are all based, either directly or at second hand, on Browne and Edwards. In fact, we get no new information respecting this bird till Audubon, in 1838 (Orn. Biog., IV, p. 359, pl. 349), announced it as a bird of the United States, on the basis of specimens sent him by Mr. Titian R. Peale, in October, 1836. These specimens, an adult male and four young, were taken alive July 22, 1836, apparently in some meadows near Philadelphia, and given to Mr. Peale by Dr. Thomas Rowan. Audubon's plate and description were based on these specimens, and his account of its habits on the letters of Mr. Peale and Dr. Rowan, which he published at length.

The gist of the matter is given in Rowan's letter, which shows that he considered it a common bird at the place where he captured his specimens. His letter, addressed "to the Messrs. Peale," as given by Audubon, is worth quoting in full for its historic interest: "On Saturday last I wrote to you of the Rail Bird breeding in this place. I then described one that I caught last summer, which was unlike the Rail in the fall season, and I presumed that all in the wet ground were the same, but this day[1] my men mowing around the pond started up two of the usual kind. The hen flew a few rods, and then flew back to her young in an instant, when they caught her together with her four

[1] This must have been July 22, 1836, judging from Peale's letter to Audubon transmitting Dr. Rowan's.

young, which I herewith send you. Many more can be caught. I have seen them in our meadow every month of the year, but they never make a great noise except when very fat on the wild oat's seed. From the above you will conclude that they do not migrate to the south [= north?], but breed here." From Mr. Peale's letter we learn that the old bird was found, on dissection, to have been "a male, rendering it singularly curious that *he* should have suffered himself to be captured by hand while in defence of the young brood." We also learn that the young died soon after Mr. Peale received them, but that "the old one lived .... until the 26th of July (four days after its capture), evincing considerable anxiety for the young, as long as they lived."

Mr. Peale also says: "There is now in the Museum [probably Peale's Museum in Philadelphia] a specimen of this species, which has been in the collection for about thirty years, said to have been caught in the vicinity of this city." This is doubtless a record of the earliest known capture of this species in the United States. Mr. Audubon adds: "Since the above was written, I have received a letter from J. Trudeau, M. D., in which he says that his father shot a considerable number of these Rails last winter [probably 1836–37] in the vicinity of New Orleans."

For our next news of this bird we must apparently return to Jamaica. Eighty-seven years after Browne's original discovery of the species, Mr. Philip Henry Gosse, in his 'Birds of Jamaica' (1847, p. 375), says: "A specimen of this little Crake [he calls it the Little Red-eyed Crake] was brought to me in April, alive and unhurt. It lived in a cage two days, but though I enclosed with it a vessel containing water and mud, with aquatic weeds in a growing state, and scattered on it crumbs of bread and pounded corn, it scarcely ate." He describes its manner of walking and its pose, as observed in confinement, and then says: "On two or three occasions, I have seen the species. Near the end of August, pursuing a White Gaulin [or White Heron] in the morasses of Sweet River, several of these little Rails, one at a time, flew out from the low rushes before my feet, and fluttering along for a few yards, with a very laboured flight, dropped in the dense rush again. Their manner of flight, and their figure greatly resem-

bled those of a chicken; the legs hung inertly down. I saw another in February, by the border of the river at the Short Cut, flying with the same feeble and laborious motion from one tuft of herbage to another, whence it would not emerge till almost trodden on." He says he never heard it utter a sound, but quotes from an old manuscript work of a Mr. Robinson, who "in describing two that were brought to him alive in October, 1760 [a date coincident with that of Browne's work already cited!] says, 'their cry was very low, and resembled that of a Coot, when at a great distance'. . . . 'Several,' he observes, 'were killed accidentally, by the negroes at work; as they are so foolish as to hide their heads, and, cocking up their rumps, think they are safe, when they are easily taken.' He [Robinson] says elsewhere, 'The negroes in Clarendon call it *Cacky-quaw*, by reason of its cry, which consists of three articulations; the negroes in Westmorland call it *Johnny Ho*, and *Kitty Go*, for the same reason.'" Mr. W. T. March, in a paper on the birds of Jamaica published in 1864 (Proc. Acad. Nat. Sci. Phila., 1864, p. 69) says: "The cry of this species is *chi chi-cro-croo-croo* several times repeated in sharp, high-toned notes, and heard at a considerable distance." He also states that it is "of frequent occurrence about marshy lands, and on the savannahs and open pastures in the vicinity of water."

With this we will dismiss the early history of the Little Black Rail, and turn to later records for the completion of its life history, taking for our new point of departure Baird, Brewer, and Ridgway's 'Water Birds of North America' (Vol. I, 1884, pp. 377–380). Here Dr. Brewer says: "It is known to occur from the Delaware marshes about Philadelphia southward; and is said to be more common in the West India Islands than with us. . . . It has been found by Mr. Krider breeding about Philadelphia, and its eggs have been obtained." Mr. Ridgway in the same work (p. 378) gives its range as "Temperate North America, north to Massachusetts, Northern Illinois (breeding), Kansas, Oregon, and California; south through Western South America to Chili; Cuba; Jamaica; Bermudas." (As will be more fully noted later, the South American portion of the range should be eliminated.) From Dr. Brewer's account we learn that the Oregon record is based on information imparted to him by Captain

Bendire. Captain Bendire's published record, in full, is as follows: "Seen on two occasions in the swamps near Malheur Lake, where it unquestionably breeds." (Proc. Boston Soc. Nat. Hist., XIX, 1877, p. 143.) Dr. Brewer also cites Mr. H. W. Henshaw, as authority for its occurrence in California, who believes it, on information furnished by Mr. Gruber, "to be rather common in the extensive tule swamps of that State." Mr. E. W. Nelson is Dr. Brewer's authority for its occurrence in Illinois, Mr. J. H. Batty for its capture in northern Connecticut, Mr. H. A. Purdie for its capture at Saybrook, Conn., and Plymouth, Mass., and Major Wedderburn and Mr. Hurdis for its occurrence in the Bermudas. Some of these references will bear amplification and more precise citation, in connection with later records.

In general terms it may be said that the range of the Little Black Rail is now known to extend from Dueñas, Guatemala (Salvin, Ibis, 1866, p. 198) and the West Indies (Jamaica, various records, Cuba, few records) northward in the eastern United States from Florida and Louisiana to Massachusetts, southern Ontario (Dundas marsh, Nash, in McIlwraith, Birds of Ont., 2d ed., p. 122), Ohio, Indiana, and Northern Illinois (various records). There are also records from Minnesota and Nebraska. Further west, there are a number of records from Kansas, two from Texas, one for Arizona, Lake Malheur, Oregon, and various records from California. There are breeding records from Jamaica, the Delaware marshes, Pennsylvania, Cape May County, New Jersey, Connecticut, Illinois and Kansas. The references to its occurrence at various points on the west coast of South America (Peru and Chili) relate to its near ally, *Porzana salinazi*, now recognized as a distinct species. It may therefore be assumed that its range extends northward, wherever there are localities suited to its peculiar needs, from Jamaica to near the northern border of the United States, and that it breeds throughout this range, retiring southward, at least to the more southern parts of the United States, in winter. The fact of its being so little known is doubtless due not so much to its extreme rarity as to its local distribution and peculiarly secretive habits, characteristic of all Rails, but especially emphasized, apparently, in

the present species. Its small size doubtless also aids in its escaping observation and capture. At least all the early records of its capture seem due purely to accident.

In completion of the present history of the species, a few of the more interesting and important later accounts of its capture may be here transcribed. In 1869 Mr. W. P. Turnbull (Birds of East Penn. and New Jersey, p. 33) records it as "Rare. It breeds on the marshes of Cape May County, New Jersey." Mr. Stone says "there is a set of eggs in the Collection of the Academy of Natural Sciences of Philadelphia labeled New Jersey. It may still occur as a rare breeder" (Birds of Penn. and New Jersey, 1894, p. 67).

In 1876 Mr. H. A. Purdie recorded a specimen from Clarks Island, Plymouth Harbor, Massachusetts, which was "picked up dead in August, 1869," and also its discovery by Mr. John N. Clark at Saybrook, Conn. Of the latter he says: "Of this species Mr. Clark . . . . writes me that a neighbor of his, while mowing at that place, July 10, 1876, swung his scythe over a nest of ten eggs on which the bird was sitting, unfortunately cutting off the bird's head and breaking all but four of the eggs" (Bull. Nutt. Orn. Club, II, 1877, p. 22). Eight years later Mr. Clark had the good fortune to discover another nest on "Great Island, a tract of salt meadow near the mouth of the Connecticut River, on its eastern shore," while hunting for nests of the Seaside and Sharp-tailed Finches. This nest was found on the 6th of June, 1884, and contained three fresh eggs. On the 13th of June he again visited the nest and "found therein the full complement of nine eggs." The old bird, however, escaped capture, although Mr. Clark devoted the whole day to this special end, visiting the nest about every half hour. Mr. Clark's very full account of the nest and eggs was published in 'The Auk,' Vol. I, 1884, pp. 393, 394.

On June 19, 1875, Mr. E. W. Nelson found a nest of this species in the Calumet Marshes, in northern Illinois. The nest contained "ten freshly laid eggs," which, with the nest, Mr. Nelson has very carefully described (Bull. Nutt. Orn. Club, I, 1876, p. 43; Bull. Essex Inst., VIII, 1877, pp. 134, 135). Mr. H. H. Brimley and Mr. John S. Cairns have reported the Little Black

Rail from North Carolina, the latter as breeding in Buncombe County (O. & O., XIV, Feb., 1889, p. 17). There are various accounts of its breeding in Kansas, where the late Col. N. S. Goss gives it as a rare summer resident, arriving about the middle of March to the first of April, nesting in May, and returning south in October (Birds of Kansas, 1891, p. 142). Its manner of occurrence in Indiana, Illinois, and Ohio has been well summarized by Mr. A. W. Butler in his 'Birds of Indiana' (1897, pp. 679–681).

The Little Black Rail selects for its nesting place, as would be expected, a wet, grassy meadow, either fresh or salt according to whether the locality is in the interior or on the seacoast. Both Mr. Clark and Mr. Nelson have noted its general resemblance to the nest of the Meadowlark, and describe it as "consisting of fine meadow grasses loosely put together, with a covering of the standing grasses woven over it and a passage and entrance at one side" (Clark); or as "composed of soft grass blades, loosely interwoven in a circular manner," and "placed in a deep cup-shaped depression in a perfectly open situation on the border of a marshy spot, and its only concealment was such as a few straggling *carices* afforded" (Nelson). The nest, as in other species, thus appears to vary with locality and the natural surroundings. A full set of eggs appears to number nine or ten, and are said by Mr. Clark to greatly resemble, in size and color, those of the Meadowlark, but to differ in being of a dull white ("creamy white," Mr. Nelson says), instead of clear white, with the spots and markings rather smaller. They average about 1.00 by .80 in. in size. According to Mr. Nelson's experience, the eggs were placed in two layers, owing to the small size of the nest, which had an inside diameter of 3.25 in.

The secretive habits of the Little Black Rail are well illustrated by Mr. Clark's attempt to secure the female, with his set of the eggs of this species. He says: "I devoted the whole day to this special end, and visited the nest about every half hour through the day, approaching it with every possible caution, and having a little tuft of cotton directly over the nest to indicate the exact spot; but although I tried it from every quarter with the utmost diligence and watchfulness, I was never able to obtain

the slightest glimpse of the bird — never perceived the slightest quiver of the surrounding grass to mark her movements as she glided away, and yet I found the eggs warm every time, indicating that she had just left them."

Plate I accompanying this article, from an excellent drawing by Mr. Fuertes, is a very life-like representation of this rarely seen species. The only previous figures of this species appear to be those published by Edwards in 1760, and by Audubon, in 1838.

THE RUFOUS HUMMINGBIRDS OF CAPE DISAP POINTMENT.

BY WILLIAM H. KOBBÉ.

CAPE DISAPPOINTMENT, formerly called Cape Hancock, forms the extreme southwestern point of Washington State, and is therefore at the mouth of the Columbia River, which enters the Pacific Ocean near the 46th degree of north latitude. Roughly speaking, this cape is in the form of a crescent and extends about one mile into the ocean, thus enclosing a small bay on the side towards the river. The opposite side receives the full force of the Pacific and is cut by the action of the mighty waves into numerous beaches and rocky headlands. In fact, the entire aspect of the cape is very hilly. At one time, I imagine, these hills formed the backbone of the cape, but they are now washed into cliffs on the ocean side and into precipitous slopes on the other. In one place the ocean seems to have broken through and connected with the bay during former centuries, thus forming a low tract or valley in the center of which a small lake has formed.

The climate of this region is rather unique. The warm oceanic current from Japan, flowing south along the coast, causes a very mild climate, and heavy and incessant rains. These rains are caused by the moisture-bearing winds moving inland from the ocean and being chilled against the Cascade Mountains.

The average yearly rainfall is about 53 inches which is distributed abundantly in autumn, winter, and spring, in dews, fogs, rains, and occasional snows. This amount of rain is not remarkable, being about the same as at Philadelphia; but since it all falls in about six months or less, it appears to be much greater for the entire year than it really is.

The result of this wet climate is best seen in the vegetation, which is remarkably luxuriant and green the year round. The entire cape is thus overgrown and where space has not been cleared by the government for a military settlement we find giant spruces and firs standing. Mr. R. H. Lawrence has described this country with such vividness that I cannot resist using his own words. He says, this whole region "is densely covered with a heavy growth of large timber — fir, hemlock, spruce, and cedar. The firs and spruces grow to be giants: it is usual to see them from four to seven feet in diameter, and over two hundred feet high. Underneath these great trees is generally a thick growth of vine-maple, hemlock, large and small, alder, etc., the ground being a network of ferns, vines, bushes, and brush, with fallen giant trees here and there in all stages of decay. On all this much moss grows; and long festoons hang from the branches of the standing trees. Except in the few dry weeks of midsummer, the bushes and ferns are generally wet. With one's face spattered with raindrops and cobwebs, and with an unsure footing, it is no wonder progress is slow through such a tangle."[1] With the exception of the extreme end, the cape is thus an unbroken wilderness. The tip, or end, is occupied by a military post with accommodations for about one hundred men who constitute the entire population. The nearest town is Ilwaco, which lies on the bay about three miles distant, and which is simply a small fishing village consisting of but one main street. The military post is known as Fort Canby, being named after General Canby, the famous Indian fighter. At this place I lived for two years, where my father was commanding officer for that length of time, giving me ample opportunity to study the bird life of the cape.

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[1] Auk, Vol. IX, 1892, pp. 39, 40.

Before I speak of any *particular* species, I think it advisable to note the effect of climate and vegetation upon the birds in general found inhabiting the cape. Upon this point Dr. Coues speaks as follows: — "The more varied the face of a country, the more varied its birds. A place all plain, all marsh, all woodland, yields its particular set of birds, perhaps in profusion; but the kinds will be limited in number. It is of first importance to remember this, when you are so fortunate as to have choice of collecting-ground; and it will guide your steps aright in a day's walk anywhere, for it will make you leave covert for open, wet for dry, high for low and back again. Well-watered country is more fruitful of bird-life than desert or even prairie; warm regions are more productive than cold ones. As a rule, variety and abundance of birds are in direct ratio to diversity and luxuriance of vegetation. Your most valuable as well as largest bags may be made in the region most favored botanically, up to the point where exuberance of plant-growth mechanically opposes your operations." This last sentence, I think, expresses the exact position in which an ornithologist is placed when he hunts upon this verdant cape.

The rainfall does not affect the number so much as it does the coloration of birds: it tends to produce darker coloration in all the species occurring in the region. This can be easily seen upon comparing certain species from this section with the same from the arid regions of the South. In the northern forms the colors and shades are not only darker, but also more distinctly and heavily marked. In some species occurring in different regions, these distinctions are so marked that they have led to the dividing of the species into subspecies. This fact is well illustrated by the two subspecies *Falco columbarius suckleyi* (Black Merlin) and *Colaptes cafer saturatior* (Northwestern Flicker). Both of these birds are simply dark forms of *Falco columbarius* and *Colaptes cafer*, respectively.

The following is a short list of some other birds in which the coloration is affected by the rainfall: — Sooty Grouse, Sharp-shinned Hawk, Sparrow Hawk, Gairdner's Woodpecker, Rusty Song Sparrow, and Townsend's Sparrow. Of course all birds are affected in some degree, but I think these are more than the others.

The Rufous Hummingbird (*Selasphorus rufus*) does not occur within the rainy region during the wet winters, and is therefore little affected by the moist climate. Mr. R. H. Lawrence states that this Hummingbird arrives at Ilwaco, Wash., on March 9, but I have seen them during the latter part of February or the first of March. The males arrive several weeks before the females, but by the end of April the cape is overrun by these flashing little beings. They are by far the most prominent bird found upon the cape and are probably the most common, although such birds as are retiring in their habits, as the Russet-backed Thrush (*Hylocichla ustulata*), may exceed them in numbers. They are particularly abundant about the flowering salmon-berry bushes and also the thimble-berry, but they seemed to be fonder of the honeysuckle blossoms than of either of the others. These Hummingbirds, although arriving early, do not depart until the rainy season begins, late in the fall. I neglected to put the exact date in my notes, but it is somewhere near the latter part of September, though of course it differs with the season.

The pugnacity of these birds is the most prominent characteristic of the species and when they are not fighting among themselves they make war upon other birds. The males are nearly always the participants and seem to take great delight in fighting each other with their utmost strength. It is a very common sight to see a male Hummer perched upon a telegraph wire or exposed twig watching for others of his own sex with which to do battle. Although they sometimes fall over and over toward the ground like two huge bees, they seldom disable one another, since their bills are very weak. The greatest efforts on the part of one of the Hummers only succeed in pulling out a few feathers of his adversary, who is finally driven away in a rather bedraggled condition. During these aerial battles the males expand their metallic feathers upon the throat and chin, which reflect the sunshine in brilliant colors, thus causing their affrays to appear particularly fierce, besides making them very beautiful on a bright day. I do not remember ever seeing the females fight; they being more retiring and timid than the males. On several occasions I have seen male Hummers fight and drive off Swallows from the vicinity of their nest, particularly when it con-

tained eggs. During the nesting season the males frequently, but not always, sit near the tree in which their home is placed and attempt to drive all birds from the vicinity of the nest. They pay great attention to their duty and seldom fail to dart after other Hummers, even if they are simply passing the tree in which the nest is placed. I have good reasons to believe that they do this more from a love of fighting than from parental instinct or devotion, since the male birds rarely appear upon the scene when their nest is being taken. Their nests may often be located by the actions of the male towards other birds in the vicinity of the nest; and I have found several nests in this way.

On March 19, 1898, while out after birds in a small grove of trees I heard a rather queer rasping note which was new to me. Upon looking around I finally saw a male Hummingbird which would fly upward for about fifty or sixty feet and then suddenly dart towards the ground until it almost touched the earth, where it made the note, which had a very rasping sound and which was quite loud. I have seen them make this note on cloudy as well as on bright days but the latter seem to be the favorite times for going through this queer performance. I have never been able to discover why they do it, but I have come to the conclusion that it has no connection with either the nesting site or with other Hummers of either sex. It seems to be an individual matter of pleasure or possibly alarm.

The nests of this bird may be looked for very early in the spring. The earliest record which I have is a nest found on April 25 of last year which contained young birds about a week old. Of course this is unusual, but nests containing eggs are quite abundant by the latter part of April if the spring is at all early. The nest just spoken of was built upon the bough of a young spruce and it was not over six feet from the ground. I find the following statement in my notes concerning a nest found on May 2. The nest was situated upon the side of a small branch which grew downward from the horizontal limb of a medium sized spruce. In a horizontal line the nest was about twenty feet from the tree trunk and half this distance from the ground. It was very well hidden by the branch upon which it rested, and difficult to find. It was composed of soft green moss

firmly held together by a network of spider webs, and was plentifully lined with plant down obtained from the siskins of the pussy willow. It showed the following measurements: Diameter outside, 1.65 inches; diameter inside, .90 of an inch; depth outside, 1 inch; depth inside, .64 inches. These birds seem to make the outside of their nests correspond as nearly as possible with the color of the surroundings. The foregoing nest was the exact color of the green bough upon which it was built. I also found a nest which was covered on the outside with fine rootlets and weed stems, the color of which corresponded exactly with the color of the dead vine in which it was placed. This nest illustrates very well the fearlessness of this Hummer, since it was placed directly over our front porch in the branches of a dead honeysuckle vine. The following note was probably written by me sometime in April and it speaks as follows concerning the nesting site: — All of the Rufous Hummingbirds' nests which I have thus far found (about twenty in number) were situated upon the boughs of spruce trees, with the exception of two. I have already spoken of one of these as being built in a dead vine. The other was situated in a thimbleberry bush and was only thirty inches, by actual measurement, from the ground. Nearly all of them are composed of lichens and spider webs lined with the down of pussy willow siskins. I think they use the spider webs mainly to make the nest stable, since they are only found on the outside as a sort of network. All the nests found were less than thirty feet from the ground and generally over six. The majority, however, fall between these figures, being over six and less than fifteen. They were always well hidden by the foliage of the thick evergreens in which they are placed, and if it were not for the female darting off her nest, very few would be found. In fact I know of only two or three nests located in other ways. These were found either by accident or by seeing the male Hummer drive off other birds.

Like all Hummingbirds this species lays but two pure white eggs, the average measurements of which are .50 of an inch long and .32 of an inch wide.

The following paragraphs are taken from the descriptions of two sets of eggs of this species taken at this place. The first

set is described as follows: I identified this set by a minute examination of the female as she sat on the nest. I used a powerful telescope and also examined her while she perched upon a telegraph wire. The only other species it could have been was Anna's Hummingbird, but this specimen had the rufous tinge on tail and under parts, so the identification is probably correct. The two eggs, one of which I broke before blowing, were rather thick and I should say the parent had been incubating for about four days. The eggs measure as follows: .49×.32 and .48×.33. The nest is composed externally of a large number of different substances and internally of the softest vegetable down. It was situated on the drooping branch of an araucaria tree eight feet from the ground and ten inches from the tip of the branch which extended directly over the middle of the walk. It measures as follows: — Diameter outside, 1.75 inches; diameter inside, .75 of an inch.

The second nest, taken upon the same day — April 10 — is described as follows: I identified this set in the same manner as I did the foregoing, but the parent of this one was so tame that she allowed me to approach within a few feet of her as she sat upon her nest, making the identification comparatively easy. On April 7 the nest contained a single egg and the second was not laid until three days after. These two eggs measure respectively .47×.32 and .48×.31.

The composition of the nest is about the same as the one just described, excepting that this one has fewer spider webs on it, and it also has one or two small feathers in the lining. The nest was situated upon the drooping branch of a shrub (*Virburnum tinus*) four and one half feet from the ground and eleven inches from the tip of the branch. This nest, like the preceding one, was built near the sidewalk, but was very difficult to find. It measures as follows: Diameter outside, 1.50 inches; diameter inside, .87 of an inch; depth outside, 1.12 inches; depth inside, .75 of an inch.

After taking the nest, I waited for the return of the parent, and when she came and found her home gone she flew about in small circles, scarcely moving an inch from the spot where the nest had been. She continued to do this for about five minutes,

and then, being certain that her nest was gone, she suddenly darted away, not to return as long as I remained there. During all this time the male bird did not appear on the scene and I only recall one instance in my experience with this species when the male has taken any interest in the taking of its nest. They seem to disappear after the nest is completed and not to return until the eggs are hatched. Nor have I ever seen the male feed the female as she sat upon her eggs, which is a common habit with other birds. The females, however, take the utmost interest in their little homes and very soon return after being flushed from their nests, alighting on them with the greatest beauty even when flying swiftly.

After a nest has been taken, a second one is speedily built if it be early in the season; this second nest, however, is generally less exposed than the first one, and is sometimes placed at a greater height. It is a peculiar fact that nine nests out of ten, almost, are placed over paths or gullies, and Mr. A. W. Anthony states that he found six nests in Washington County, Oregon, all of which were found in an old railroad cut.

Soon after the eggs are both laid, the female begins to sit and after a few weeks the young are hatched, naked and helpless little creatures, about the size of a large pea. The parents are now kept busy bringing food, which consists of minute insects contained in the honey and sweets of flowers, to their young. To accomplish this, the parent bird alights upon the rim of the nest and places its bill some distance into the mouths of the young and in this way feeds them. As the young birds develop under the assiduous care of the parents, the tiny nest becomes almost too small for them and they are finally forced to face in opposite directions just as two shoes are put in a box. The nest also becomes somewhat flattened, and by the time the young leave, it is a sorry looking object, unfit to keep.

By the latter part of August all the young had left their nests and the parents were beginning to prepare for their southward migration. A month later all the Hummers have left and the cape is given over to the incessant rains of a long winter.

ON THE PERFECTED PLUMAGE OF THE KING EIDER (*SOMATERIA SPECTABILIS*).

BY ARTHUR H. NORTON.

IN A private letter written to me by Mr. Fred Rackliff from Big Green Island, Knox Co., Me., under date of December 30, 1898, I have this record: "There are three of the finest King Eiders staying off the east side of the island that you ever saw,—two Drakes and a Duck; they have been here over a month; shall get a shot at them before long."

As a proof of Mr. Rackliff's statement, the Drakes are now before me, and both are indeed fine specimens; but one, a superb Drake, is deserving of more than a passing notice, as it shows a pterylographic adornment, or modification of the outer tertials, not mentioned in the manuals most commonly employed by American students. Two of the outer tertials have their shafts distally depressed, slightly expanded, and curved downward (not laterally as in falcate secondaries); vane outlines asymmetrical by great production of many barbs of the outer web; the barbs of the inner feather have a length of 50 mm.; the vane having tapered suddenly from the base of the feather to this width, becomes suddenly constricted and tapers to the end of the feather which terminates with the naked shaft; the posterior outline of the vane is crescentic, owing to the backward direction of the barbs forming the point of the vane.

The produced parts of the vanes fold, the superior or inner of which is the longer, enclosing the inferior or outer, and both curve slightly upward from the plane of the back at a little less than an angle of 45°, having the effect of a pair of pyramids rising from the posterior border of the scapulars.

Nearly all of the so-called adult Drakes of this species which I have examined, show, though in a far less degree, a production of a part of the outer web of corresponding tertials, suggesting that this adornment is common in the highest phase of maturity,

which according to Temminck, on the authority of Sabine, is not attained until four years (Temm., Man., II, 852).

Though this species has been otherwise minutely described, there exists considerable discrepancy concerning the nomenclature of the delicate colors. I hope, therefore, that a detailed description of the color masses of this specimen, based upon Mr. Ridgway's 'Nomenclature of Colors,' may not seem superfluous.

As the specimens are dried and without full field data, I have nothing to offer concerning the colors of the naked parts, but these have been described by Brisson, Audubon, Baird and associates, as well as by Dr. Coues.

Band of feathers around frontal processes extending backward in a point over lore, wide spot under and extending behind the eye, narrow line around upper eyelid, large Λ-shaped mark from chin along sides of gular region (57 mm. long), scapulars, tertials, secondaries, primaries, and their coverts, alulæ, greater wing coverts, pelvic region of back (tergum[1]), tail with both series of coverts, sides except sides of rump, and under parts (venter[2]) black, very pure and deep on head, throat, venter, rump, secondaries, tertials, and both series of tail-coverts. The scapulars are washed with slate; the primaries, their coverts, alulæ, and tail brownish, the four falcate secondaries having brownish shafts.

A spot above the rictus, the chin, upper throat, and sides of neck squarely joining the buff below, entire back of neck below the nape, interscapular wedge, large area at base of tail, median and lesser wing-coverts white. Marginal coverts dusky, with broad hoary tips. Hood extends from forehead and includes the nape, not, however, reaching upper border of the eye. Pileum proper cinereous, deepening to plumbeous on the nape. Lower border of pileum forming a large supra-loral area and narrow line to ear, pearl gray, joined at the ear by a dusky line which reaches around the nape, thus enclosing the plumbeous area. Spot above the eye and narrow line of normal feathers below border of hood very pale wash of malachite green. Sides of head covered with feathers rendered abnormal by their barbs becoming stiffened, and destitute of barbules for at least their exposed portions, thus rendering the parts so covered iridescent: these nude barbs are malachite green in color, but feathers have barbuled bases white, which color, showing through the separated points, gives the cheeks a washed green appearance, so that it has been justly deemed "exceedingly difficult of imitation by colorists."

[1] Sundevall's Tentamen, Nicholson's Trans., p. 297.

[2] Sundevall's Tentamen, Nicholson's Trans., p. 298.

The loral and auricular regions are quite rich green. Jugulum and lower throat abruptly joining white above and black below, rich ochraceous buff.

The frontal processes are much more developed than the one shown in the splendid figure in Ridgway's 'Manual,' its anterior outline at a right angle with the line of the tomium, the farthest point from tomium being 38 mm., its greatest width 27 mm., its least width 18 mm., while the greatest depth of bill is 17 mm. The other Drake shows respectively 34, 24, 17 and 18 mm.

Though the birds were reported at the close of December, they spent the winter at the place secure from the various strategies used to approach them, or lure them within shot of the shore, and so it was the beginning of April before they came into the hands of this expert collector. This was due to the fact that the depth of water required to yield their favorite food, — which upon dissection proved to be young holothurians (*Pentacta frondosa*), — kept them farther from the shore than *Somateria dresseri* is accustomed to feed, and this animal being abundant at their chosen spot, they would not condescend to approach decoys as *S. dresseri* did.

According to Hagerup, *S. spectabilis* habitually feeds in deeper water than that required by *Somateria mollissima borealis* in Greenland where both species are abundant (Birds of Greenland, p. 19).

RANGES OF *HYLOCICHLA FUSCESCENS*, AND *HYLOCICHLA FUSCESCENS SALICICOLA* IN NORTH AMERICA.

BY REGINALD HEBER HOWE, JR.

WHILE looking over the Ornithological Collection of the Museum of Comparative Zoölogy, I came across a peculiar specimen of Wilson's Thrush (*Hylocichla fuscescens*) taken at Newport, Rhode Island, by R. L. Agassiz on the very late date for this locality of September 25, 1885. A few days later I happened to

speak to Dr. Walter Faxon in regard to this specimen, and he spoke of always having noticed a peculiarity in late fall migrants of this species in New England. This led me to look into the matter more carefully with the following results.

I find that the range of typical *Hylocichla fuscescens* extends northward to Nova Scotia (Streuracke); Toronto, Ontario; northern Ohio; and westward to Missouri. Audubon recorded it from Newfoundland (Orn. Biog., II, p. 362) and Labrador, the species, however, was probably *Hylocichla aliciæ*. Mr. William Brewster recorded it from Ellis Bay, Anticosti (Proc. Boston Soc. Nat. His , Vol. XXII, p. 368) where he writes "rather to my surprise I came upon a pair of these Thrushes, ... they were seen so distinctly that there can be no doubt as to the correctness of the identification." The birds, however, were not taken. Thompson in 'Birds of Manitoba' (Proc. U. S. Nat. Museum, Vol. XIII, p. 633) records this species as an "abundant summer resident," and gives the following localities where the species has been recorded: Pembina; Red River Valley; Selkirk, and Red River; Shoal Lake; Oak Point; Portage la Prairie; Lake Manitoba, and westward; Carberry; Qu' Appelle; but Thompson's records for typical *Hylocichla fuscescens* are probably at fault, the bird inhabiting this region (Manitoba) being undoubtedly *Hylocichla fuscescens salicicola*, for the specimen (Coll. U. S. Nat. Mus. No. 112606) from Shoal Lake, Manitoba, I have examined, and it is typical of this last named race, as are many other specimens examined from the same region. Two specimens (Coll. U. S. Nat. Mus., Nos. 63847, Pembina, Dak., and 13698, Rainy Lake River), identified by Mr. Ridgway as *H. fuscescens* are without doubt *salicicola*, though slightly intermediate, as might be expected, being taken on the border line between the two races.

The range of *Hylocichla fuscescens salicicola* Ridgw., Willow Thrush, is from Missouri (Charleston) and Dakota westward to the Rocky Mountains (Washington, Spokane), south to New Mexico and Arizona, and northward to Manitoba, Rainy Lake River and British Columbia (Kamloops). A series of specimens from Codroy, Newfoundland, in Mr. William Brewster's collection I find to be typical *salicicola*, but I am unable to obtain any

specimen along the line of the 50th parallel of latitude between Newfoundland and Rainy Lake River. Although this apparent hiatus exists, careful comparison and measurements show no difference between specimens from these two localities. The specimen from Chicago, Ill., which Mr. Ridgway cited in the collection of H. K. Coale of that city (No. 15681), taken September 16, was undoubtedly a fall straggler, but probably not so far out of its range as at that time supposed. The bird recorded from Cook Co., Texas (Cook's Migration in the Miss. Valley, Bull. No. 2, U. S. Dept. of Agr., p. 284) was probably also a straggler. The pair of Thrushes observed by Mr. Brewster on Anticosti may have been of this race, for without the bird in the hand it is difficult, though not impossible, to tell it from *Hylocichla fuscescens*, and it seems unlikely that Mr. Brewster should identify *fuscescens* or its subspecies for *aliciæ*. The specimen taken at Newport, before referred to (also typical *salicicola*), and the Willow Thrush recorded from near the town of Chester, South Carolina, October 5, 1888, by Leverett M. Loomis (Auk, Vol. VI, No. 2, p. 194), and a male taken by me at Bristol, Rhode Island, on September 24, 1899 (typical *salicicola*), are probably not stragglers, as one might heretofore have supposed, from the far West, but from Newfoundland. The question at once arises as suggested above, whether *salicicola*, as it inhabits Newfoundland, does not also inhabit Labrador, Anticosti, and surrounding regions, and whether it does not also inhabit the intervening country between its known western and eastern habitats.

It will be interesting to see whether many of the eastern United States collections do not contain specimens of *salicicola* taken late in the fall or perhaps early in the spring, formerly identified as *Hylocichla fuscescens*.[1]

It is thought that it may be of value to add here, beside the

[1] Since the above was put in type I have received from Mr. W. E. Saunders a specimen of *H. f. salicicola* from Ottawa, Ont., taken Sept. 19, 1899. Being a fall specimen, it only shows the southward migration of this race extends as far west as Ottawa, or that in case the bird had followed a direct southern route, that the region directly north of Ottawa is inhabited by *H. f. salicicola*, which would be interesting as filling the gap between its western and eastern ranges.

table of measurements of specimens examined, a supplementary description of *Hylocichla f. salicicola*; as Mr. Ridgway's description is in some ways decidedly unsatisfactory.

Upper parts *olivaceous*-tawny, "russet olive" particularly on crown, nape, back, scapulars and tail, most tawny on the rump. Under parts: throat almost immaculate and unmarked, breast suggesting *swainsonii*, dark olivaceous-buff, not light tawny buff like *fuscescens*, quite heavily marked with blunt arrow shaped spots of fuscous, especially in the fall, unlike the brownish more penciled markings of *fuscescens*; lower breast and belly white, tinged strongly with olivaceous on the sides and flanks; wings olivaceous-tawny "russet olive" with the greater, middle and primary coverts tawny; cheeks tawny, but not lores, as in *swainsonii*; upper mandible very dark brown, under horn color, *tipped with brown as in swainsonii*, unlike *fuscescens*, whose under mandible is untipped in the spring and lightly if at all in the fall.

Ridgway states that the breast in adult spring specimens "is only faintly or not at all spotted with darker," which is hardly so, I think even in the very specimens he examined, this marking of the breast being one of the characteristics of *salicicola*; and his measurements, proving the race "averaging decidedly larger" than *fuscescens*, do not agree with mine taken from a much larger series than he tabulates, showing the males of *salicicola* to be only slightly larger, and the females slightly smaller than *fuscescens*, or no real material difference in size.

For the use of specimens for comparison thanks are due to Dr. Chas. W. Richmond and Mr. F. W. True of the U. S. National Museum; Mr. Witmer Stone of the Academy of Natural Sciences, Phila.; Dr. Walter Faxon, Museum Comparative Zoölogy, Cambridge; Mr. William Brewster of Cambridge; Mr. Paul Bartsch of Washington, D. C.; Mr. G. F. Dippie of Toronto, Canada, and Mr. H. B. Bigelow of Boston.

HYLOCICHLA FUSCESCENS SALICICOLA.

Males.

Coll. No.	Collection.	Locality.	Date.	Sex.	Wing.	Tarsus.	Bill.	
							Culmen.	Nostril.
46261	Wm. Brewster, Cambridge	Codroy, Newfoundland	June 1, 1895	♂	4.00	1.18	.50	.39
46264	" " "	" "	" 15, 1895	♂	4.10	1.13	.48	.37
46260	" " "	" "	May 31, 1895	♂	4.03	1.15	.45	.36
46262	" " "	" "	June 1, 1895	♂	3.76	1.20	.48	.35
46263	" " "	" "	" 1, 1895	♂	4.07	1.15	.51	.38
46258	" " "	" "	May 31, 1895	♂	4.02	1.22	.52	.41
46259	" " "	" "	" 31, 1895	♂	3.98	1.19	.45	.35
25331	Comp. Zool., Cambridge	Mouth Blue River, Colorado	June 4, 1877	♂	4.10	1.19	.48	.39
65052	" " "	Fort Rice, Dakota	" 16, 1873	♂	3.80	1.10	.52	.39
	Bryant, Cambridge	Charlestown, Missouri	May 9, 1879	?	3.88	1.10	.51	.40
66669	U. S. Nat. Mus.	Fort Garland, Colorado	June 19, 1873	♂	3.95	1.17	.48	.38
10882	" " "	Fort Bridger, Wyoming	May 28, 1858	♂	3.81	1.14	.47	.38
13698	" " "	Rainy Lake River	" 29, ?	♂	3.90	1.10	.49	.35
65893	" " "	Souris River	Sept. 16, 1873	♂ ?	3.86	1.16	.52	.39
65051	" " "	Fort Rice, Dakota	June 14, 1873	♂ ?	4.00	1.14	.49	.35
112606	" " "	Shoal Lake, Manitoba	May 20, 1887	♂	4.02	1.20	.53	.35
41519	" " "	Montana	" 1865	♂ ?	4.00	1.23	.51	.38 ?
63847	" " "	Pembina, No. Dakota	Aug. 19, 1887	♂	3.88	1.20	.51	.37
112605	" " "	Shoal Lake, Manitoba	May 20, 1887	♂	3.86	1.14	.52	.39
31555	Acad. Nat. Sciences	Kamloops, British Columbia	July 14, 1892	♂	3.91	1.16	.45	.36
31554	" " "	Clinton, British Columbia	" 6, 1892	♂	3.92	1.15	.47	.36
31553	" " "	Bonaparte, British Columbia	" 16, 1892	♂	3.90	1.16	.48	.36
29240	" " "	Dickinson Co., Iowa	June, 1881	?	4.07	1.26	.51	.35
790	R. H. Howe, Jr., Brookline	Bristol, R. I.	Sept. 24, 1899	♂	3.85	1.13	.48	.36
	Totals, average				3.94+	1.16+	.49+	.37+

HYLOCICHLA FUSCESCENS SALICICOLA.

Females.

Coll. No.	Collection.	Locality.	Date.	Sex.	Wing.	Tarsus.	Bill.	
							Culmen.	Nostril.
46267	Wm. Brewster, Cambridge	Codroy, Newfoundland	June 10, 1895	♀	3.74	1.16	.51	.47
46266	" " "	" "	" " "	♀	3.77	1.13	.50	.40
46265	" " "	" "	May 30, 1895	♀	3.89	1.10	.47	.36
36524	Comp. Zool., Cambridge	Newport, R. I.	Sept. 25, 1885	♀	3.75	1.15	.47	
118369	U. S. Nat. Mus.	(Near Spokane) Washington	June 10. 1890	♀	3.71	1.14	.50	.35
10881	" " "	Fort Bridger, Wyoming	May 27, 1858	♀	3.83	1.12	.49	.35
31556	Acad. Nat. Sciences	Kamloops, British Columbia	July 14, 1892	♀	3.79	1.05	.50	.37
31557	" " "	Vernon, British Columbia	Aug. 1, 1892	♀	3.78	1.11	.49	.38
31558	" " "	" " "	" 9, 1892	♀	3.77	1.14	.44	.32
1401	Paul Bartsch, Wash.	Allamakee Co., Iowa	June 28, 1895	♀	3.78	1.15	.50	.35
1402	" " "	" " "	" 27, 1895	♀	3.65	1.18	.47	.31
1589	" " "	Burlington, Iowa	Aug. 29, 1898	♀	3.76	1.19	.50	.35
	Totals, average				3.77—	1.13+	.49+	.36+

HYLOCICHLA FUSCESCENS.

Coll. No.	Collection.	Locality.	Date.	Sex.	Wing.	Tarsus.	Bill.	
							Culmen.	Nostril.
153	R. H. Howe, Jr., Brookline	Belmont, Mass.	May 23, 1896	♂	3.91	1.09	.50	.35
124	" " "	" "	" 20, 1893	♂	4.09	1.16	.49	.35
192	G. C. Shattuck, "	Brookline, "	" 17, 1896	♂	4.05	1.21	.51	.35
36	" " "	" "	" 13, 1894	♂	4.10	1.15	.51	.38
8095	Comp. Zool., Cambridge	Cambridge, "	" 22, 1868	♂	3.95	1.19	.52	.40
538	" " "	Newtonville, Mass.	" 16, 1868	♂	3.85	1.15	.52	.38
8094	" " "	Cambridge, "	" 22, 1868	♂	3.91	1.20	.50	.35
23330	" " "	Plainfield, N. J.	" 10, 1872	♂	4.10	1.09	.48	.37
23329	" " "	" "	" 10, 1871	♂	3.90	1.10	.50	.38
	H. V. Greenough, Brookline	Chestnut Hill, Mass.	" 16, 1897	♂	4.09	1.19	.54	.42
	Bryant, Cambridge	Washington, D. C.	June 20, ?	♂	3.77	1.15	.47	.36
120	" "	Lynn, Mass.	May 17, ?	♂	3.58	1.08	.48	.38
118	" "	" "	" 15, ?	♂	3.76	1.11	.49	.37
112604	U. S. Nat. Museum	Toronto, Canada	Aug. 19, 1887	♂	4.01	1.23	.50	.38
18818	" " "	Steuracke, Nova Scotia		♂	3.77	1.15	.46	.35
	Totals, average				3.92+	1.15	.49+	.37+
632	R. H. Howe, Jr., Brookline	Brookline, Mass.	May 15, 1898	♀	3.71	1.05	.48	.35
19	R. W. Gray, "	" "		♀	3.91	1.10	.55	.37
	H. V. Greenough, "	Chestnut Hill, Mass.	May 27, 1896	♀	3.80	1.16	.49	.38
8836	Comp. Zoo, Cambridge	Newtonville, "	" 25, 1868	♀	3.70	1.19	.47	.35
6764	" " "	Brookline, "	" 1851	♀	3.90	1.19	.50	.35
8096	" " "	Cambridge, "	" 22, 1868	♀	3.65	1.18	.55	.38
121	Bryant, Cambridge	Lynn, "	" 17, ?	♀	3.79	1.14	.48	.37
	" "	Milton, Maine	" 27, 1874	?	3.64	1.16	.50	.35
119	" "	Lynn, Mass.	June 6, ?	♀	3.97	1.18	.50	.38
108	G. F. Dippie, Toronto	Toronto, Canada	May 1, 1894	♀	3.98	1.20	.50	.36
	Totals, average				3.80+	1.15+	.50+	.36+

COMPARATIVE MEASUREMENTS.

	♂				♀			
	Wing.	Tarsus.	Bill.		Wing.	Tarsus.	Bill.	
			Culmen	Nostril.			Culmen	Nostril.
H. fuscescens	3.92+	1.15	.49+	.37+	3.80+	1.15+	.50+	.36+
H. f. salicicola	3.94+	1.16+	.49+	.37+	3.77—	1.13+	.49+	.36+

A NEW WREN FROM ALASKA.

BY HARRY C. OBERHOLSER.

THE Wren inhabiting the westernmost islands of the Aleutian group proves, upon examination, to be easily distinguishable from that found from Unalaska eastward and with which it has hitherto been considered identical. The type of *Anorthura alascensis* came from Saint George, one of the Pribilof Islands, and is apparently the same as the Unalaska bird, being certainly different from the form on the western Aleutians; which latter, thus entitled to a new name, may be called

Anorthura meligera, sp. nov.

CHARS. SP. — *Anorthura* A. alascensi *affinis sed obscurior, multo minus rufescens, corpore posteriore magis distincte fasciato.*

Al., 50.5–55.5 (52.9) mm.; caud., 33.5–37 (34.3) mm.; culm. exp., 14–16 (15.1) mm.; tars., 18.5–20 (19.2) mm.

Geographic Distribution. — The westernmost islands of the Aleutian group, Alaska.

Description. — Type, female adult, No. 135647, U. S. Nat. Mus.; Attu Island, Aleutian Islands, Alaska, June 4, 1894; C. H. Townsend. Above sepia brown, reddening somewhat posteriorly, the lower back indistinctly, the rump and superior tail-coverts distinctly barred with blackish; tail prout's, brown, paler exteriorly, barred with blackish; wings fuscous, the secondaries and wing-coverts indented with dull ochraceous, the primaries with buffy; sides of head like the back, mottled with buffy; super-

ciliary streak ill-defined, dull buff; lower parts wood brown, rather deeper and more ochraceous on breast and jugulum, paler on abdomen; crissum and abdomen heavily barred with blackish.

Anorthura meligera seems to be most closely allied to *A. alascensis*, from which, however, it is quite distinct. The generally darker and much less reddish color, particularly above, is perhaps the best character for identification. The rump and upper tail-coverts are more evidently barred; the transverse markings on the abdomen are heavier and extend somewhat farther forward; the wing and the bill average rather longer. In the lack of rufescence above, and in the conspicuous barring of the posterior lower surface the present species resembles *Anorthura pallescens* Ridgway,[1] from the Commander Islands, but is much darker above and much more ochraceous on the anterior under parts. It is thus to some extent intermediate in color between *pallescens* and *alascensis*, as might be expected from its geographical position. The specimens examined are from Attu, Kyska and Atka Islands, and seem practically identical, indicating no intergradation with *A. alascensis*.

The following millimeter measurements are averages of five ndividuals (four males and one female):

	Wing.	Tail.	Exposed culmen.	Tarsus.	Middle Toe.
Anorthura meligera . . .	52.9	34.3	15.1	19.2	14.
Anorthura alascensis . . .	50.8	34.2	13.7	19.3	13.4

This very interesting addition to the Alaskan avifauna is here described through the kindness of Mr. Robert Ridgway.

[1] Proc. U. S. Nat. Mus., VI, 1883, p. 93.

NEW SPECIES, ETC., OF AMERICAN BIRDS. — V. CORVIDÆ. — (Concluded.)

BY ROBERT RIDGWAY.

Curator of the Division of Birds, U. S. National Museum.

(By permission of the Secretary of the Smithsonian Institution).

Xanthoura yncas galeata, subsp. nov. HELMETED INCA JAY.

Similar to *X. yncas* but larger, and with the erect nasal plumes greatly developed, forming a very conspicuous prefrontal crest; wing averaging 5.00, tail, 6.19, bill from nostril 0.71, tarsus 1.55, middle toe 0.95.[1]

Western Colombia. (Type, No. 81879, U. S. Nat. Mus., Colombia.[2])

This very easily recognized form has been confounded with both *P. yncas* and *P. y. cyanodorsalis*. It certainly intergrades with the last, as it probably does with the former also, though specimens are wanting from the district necessary to show whether this is the case or not. *P. y. cyanodorsalis* agrees with the present form in the conspicuous frontal crest, but differs in having the hindneck, occiput, and more or less of the crown bright blue, the back also being often strongly washed with blue.

Xanthoura yncas cyanodorsalis (*Dubois*). — This form, although most of the specimens seen, like a majority of those of the preceding, are labelled "Bogota," apparently belongs to the more eastern mountain ranges of Colombia, extending thence into western Venezuela as far as Merida, from which locality the National Museum possesses a specimen.

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[1] Five adults; eleven adults of *X. yncas*, from Ecuador, Peru, and Bolivia, average as follows: wing, 4.86, tail, 5.79, bill from nostril 0.65, tarsus, 1.52, middle toe 0.92. Specimens from Peru, however, average decidedly larger than those from Ecuador or Bolivia, but they have the nasal plumes equally short and inconspicuous.

[2] The type specimen, with others, was part of a collection containing examples of *Cyanolyca armillata quindiuna*, and therefore undoubtedly came from the same portion of Colombia as that inhabited by the latter.

Xanthoura yncas chloronota (*Wagler*). — Although Wagler's description includes two forms (his supposed young male being *X. luxuosa*), the principal description seems clearly to apply to this form only, since the erect frontal plumes, specially mentioned, would exclude the yellow-bellied *P. luxuosa guatemalensis*.

Xanthoura luxuosa glaucescens, subsp. nov. RIO GRANDE GREEN JAY.

Similar to *X. luxuosa*, but smaller, paler, and duller, with less white on forehead, the back bluish green, more or less (usually extensively) tinged with pale blue; adult male averaging wing 4.46, tail 4.95, culmen 0.98, tarsus 1.48, middle toe 0.82.

Lower Rio Grande Valley.

Type, No. 70593, ♂ ad., Ft. Brown, Texas; Dr. J. C. Merrill, U. S. A.

Xanthoura luxuosa luxuosa (*Lesson*). GREEN JAY.

This, the central form of the species, inhabits the eastern portion of the Mexican plateau, from the States of Vera Cruz and Puebla north to the middle portion of the States of Tamaulipas (Alta Mira, Victoria, etc.) and Nuevo Leon (Monterey). It is intermediate in characters between *X. l. glaucescens* and *X. l. vivida*, with both of which it of course completely intergrades.

Xanthoura luxuosa vivida, subsp. nov. TEHUANTEPEC GREEN JAY.

Similar to *X. luxuosa*, but larger and brighter colored, with under tail-coverts yellow or but slightly tinged with green (instead of wholly light green); differing from *X. l. guatemalensis* in being larger, brighter green above, and distinctly light yellowish green below, except on abdomen and under tail-coverts; adult male averaging wing 4.80, tail 5.37, culmen 1.10, tarsus 1.56, middle toe, 0.88.

Southern Mexico (States of Oaxaca, Guerrero?, Michoacan?, northeastern Colima, Chiapas?) and northwestern Guatemala.

Type, No. 144810, U. S. Nat. Mus. (No. 2585, U. S. Biol. Surv.), ♂ ad., Pluma, Oaxaca, March 20, 1895; Nelson and Goldman.

X nthoura luxuosa guatemalensis (*Bonaparte*). GUATEMALA GREEN JAY.

This is a smaller form, with the under parts entirely pure yellow or but slightly tinged with green, and the green of back, etc., rather duller. It inhabits central and eastern Guatemala, Yucatan, and northern Honduras.

Dr. Sclater's argument that the name *X. guatemalensis* of Bonaparte cannot be used for this form because Bonaparte describes his bird as having the under parts pure yellow, will not hold, for the reason that all the Honduras specimens examined (three in number), most of those from Yucatan, and some from Guatemala, have the under parts exactly as pure yellow as in any of the South American forms.

Altogether, considerably more than one hundred specimens have been examined in connection with the preparation of the present paper.

NEW SPECIES, ETC., OF AMERICAN BIRDS. — VI. FRINGILLIDÆ (Supplement).

BY ROBERT RIDGWAY.

Curator of the Division of Birds, U. S. National Museum.

(By permission of the Secretary of the Smithsonian Institution.)

Melospiza melodia kenaiensis, subsp. nov.
KENAI SONG SPARROW.

Intermediate between *M. m. caurina* and *M. m. insignis;* larger than the former, with upper parts more uniform in color (streaks on back, etc., less distinct); smaller than the latter, with pileum browner and streaks on chest, etc., darker. *Adult male:* Wing, 3.02–3.15 (3.08); tail, 2.84–2.86 (2.85); exposed culmen, 0.52–0.56 (0.54); depth of bill at base, 0.28–0.30 (0.29); tarsus, 1.02; middle toe, 0.73–0.75 (0.74). *Adult female:* Wing, 3.08; tail, 2.97; exposed culmen, 0.55; tarsus, 1.00; middle toe, 0.71.

Coast of Kenai Peninsula, Alaska, from east side of Cook's Inlet to Prince William Sound.

Type, No. 131730, U. S. Nat. Mus., ♂ ad., Port Graham, Cook's Inlet, Alaska, April 9, 1892; C. H. Townsend.

Passerella iliaca insularis, subsp. nov. KODIAK FOX SPARROW.

Similar to *P. i. unalaschensis* but much browner and more uniform above (back, etc., warm sepia), spots on chest, etc., larger and much deeper brown, and under tail-coverts more strongly tinged with buff.

Kodiak Island (and Middleton Island?), Alaska, in summer; south to California in winter.

Type, No. 52475, U. S. Nat. Mus., ♂ ad., Kodiak, Alaska, May 17, 1868; F. Bischoff.

Passerella iliaca annectens, subsp. nov. YAKUTAT FOX SPARROW.

Similar to *P. i. insularis* but smaller (the bill especially) and coloration slightly darker; similar to *P. i. townsendi*, but the brown color less castaneous.

Coast of Alaska, from Cross Sound to Prince William Sound (to Cook's Inlet ?); south in winter to California.

Type, No. 170222, U. S. Nat. Mus., Yakutat, Alaska, June, 20, 1899; R. Ridgway.

It is proper to explain that, according to the writer's views, the form called *P. i. unalaschensis* is restricted to the Shumagin Islands and Alaskan peninsula (possibly also parts of the island of Unalashka) in summer. This form is very nearly as gray as *P. i. schistacea*, and closely resembles that subspecies, but has the brown color of the upper tail-coverts and tail decidedly less rufescent and therefore less strongly contrasted with the brownish gray color of back, etc.

The five subspecies of the Pacific coast district, as they appear to me, have breeding ranges as follows: —

Passerella iliaca unalaschensis. Shumagin Islands and Alaskan Peninsula; Unalashka?

Passerella iliaca insularis. Kodiak Island; Middleton Island?

Passerella iliaca annectens. Coast between Cross Sound and Prince William Sound; Kenai Peninsula?

Passerella iliaca townsendi. Coast and islands between Cross Sound and Dixon Entrance.

Passerella iliaca fuliginosa. Coast and islands from southern side of Dixon Entrance to northwestern Washington (Olympic Mts., etc.).

THE CONDITIONS GOVERNING BIRD LIFE IN ARIZONA.

BY HERBERT BROWN.

THE conditions governing bird life in Arizona are not as elsewhere 'in the States.' This country is but thinly settled, the big towns, particularly, being few and far between. Outside of their immediate vicinity the shot gun practically disappears, and the country man and boy cut but small figure in the increase or decrease of birds. The general aridity of the country is such that vast tracts of land must, perforce, remain forever uninhabited. Cattle interests are, however, a dominant feature in the development of the country, and to these, more than all else combined, must be charged the obliteration of bird life in the so-called desert portions of the Territory.

The stock business at one time promised enormous profits and because of this the country was literally grazed to death. During the years 1892 and 1893 Arizona suffered an almost continuous drouth, and cattle died by the tens of thousands. From 50 to 90 per cent of every herd lay dead on the ranges. The hot sun, dry winds and famishing brutes were fatal as fire to nearly all forms of vegetable life. Even the cactus, although girdled by its millions of spines, was broken down and eaten by cattle in their mad frenzy for food. This destruction of desert herbage drove out or killed off many forms of animal life hitherto common to the great plains and mesa lands of the Territory. Cattle climbed to the tops of the highest mountains and denuded them of every living thing within reach. Often many miles from water and too weak to reach it they perished miserably. I saw, later, what I had never expected to see in Arizona, Mexicans gathering bones on the ranges and shipping them to California for fertilizing purposes. I have thus particularized, for in these dry bones can be read the passing of the Partridge from many a broad mile of the Territory, in fact they practically disappeared from four fifths of the country. When food and protection were abundant these birds were plentiful from the Colorado to the Rio Grande. On the plains and in

the valleys Gambel's Partridges were evermore to be met with, while the Blue or Scaled were almost as common over much of the same country. The Massena, occupying the highest ranges, were, naturally, better protected and thus escaped the general doom. They were, however, never very numerous and soon became exceedingly rare, but when conditions again became favorable they seemed to recover from their losses more readily than did their congeners, and in a few years were again to be found in their old time numbers. Of the Masked Bob-white but little can be said. The few that were then known to exist dropped out of sight altogether and it was not till the spring of last year that I could learn of one being in the country. At that time two small bunches were reported to me, one on the upper Santa Cruz, the other, to my surprise, high up on the eastern slope of the Baboquivari Mountains. Heretofore I had never known them to range higher than the foothills.

Although the cattle industry is slowly recuperating from its great loss it will never again assume its former proportions, for the lessons thus taught will not soon be forgotten. The ranges were foolishly overstocked, and thus many owners of big herds were financially ruined by their covetousness, but under the most favorable circumstances it will be years before the life, once so common to the desert country, recovers from the shock. In the cultivated valleys, and country adjacent thereto, it is again on its feet, but the great reaches of desert are still tenantless. Subsequent to the big drouth I traveled several hundred miles across country and did not see a dozen Quail a day where formerly I had seen hundreds.

The Gambels are a hardy bird and under ordinary conditions multiply rapidly, and, although not susceptible of domestication, increase enormously in the cultivated districts. In 1889 and 1890 there was, so I was informed by the express agent, shipped out of the Salt River valley 3000 dozens. In 1887, I think, the first game law was introduced in the territorial legislature. The bill originated in the Tucson Gun Club, and its purpose was largely the protection of 'Quail,' but so great a pest were the birds regarded by the ranchmen in the Salt River valley that the legislators from Maricopa County threatened to kill the bill unless the

clause protecting 'Quail' was stricken out. They were therefore exempted from its provisions, but two years later the law was amended in their behalf. Under a misapprehension the word 'partridge' had been allowed to stand and prosecutions could have been had under it for the wanton destruction of these birds, but none were instituted as conviction would have been impossible.

The Mohawk valley, in Yuma county, is probably the most prolific breeding spot in the Territory. It was, at one time, a favorite place for trappers and pot-hunters, and it was not until the game law had been amended that their nefarious practices were broken up. In six weeks, in the fall of 1894, no less than 1300 dozens were shipped to San Francisco and other California markets. The price at first realized, so I was told by the shippers, was $1.12\frac{1}{2}$ per dozen, but later 60 cents only were realized. The Quail were trapped, their throats cut, then sacked and shipped by express. I was told by one of the parties so engaged that he and his partner caught 77 dozens in one day. They used eight traps and baited with barley. Their largest catch in one trap, at one time, was 11 dozens. At the meeting of the next legislature the game law was again amended and it was made a misdemeanor to trap, snare or ship Quail or Partridges from the Territory. This effectually stopped the merciless slaughter of the gamiest bird in Arizona — Gambel's Partridge.

Carolina, White-winged, Inca, and Mexican Ground Doves are all common to southern Arizona. After the drouth, before referred to, these birds increased to large numbers in the cultivated districts, more especially the two former. This was due to no actual increase in the number of birds, but to lack of food elsewhere. They were destroyed by gunners in and out of season. They were, however, included in the amended game law of 1897, and are now protected between the first day of March and the first day of June. Another month is, I think, necessary to see them through the breeding season. The next legislature will be asked to extend the closed season to the first of July.

In a country so widely uninhabited as this it is not possible to particularize much as to other birds, especially the migrants which come and go with each recurrent spring and fall. To many of

them Arizona is but a bridge to reach their breeding and winter grounds, hence they are met with here only as travelers to the north and south. Among the summer residents I cannot say there was any appreciable diminution, but it did noticeably change the nesting habits of several of the larger Thrashers. Heretofore they had chiefly made homes in the different forms of cacti, and when this was broken down and destroyed they occupied the next round on the vegetable ladder — mesquite and palo verde trees and bushes.

THE MOULT OF THE NORTH AMERICAN *TETRAONIDÆ* (QUAILS, PARTRIDGES AND GROUSE).

BY JONATHAN DWIGHT, JR., M. D.

I. Fundamental Principles of Moult and of Plumage.

IN SPITE of all that has been written regarding the plumages of the Grouse and their allies variously known as the Quails, Partridges, Pheasants and Ptarmigans, there still is room for further discussion of the relations that exist between their plumages and their moults, from which standpoint little has hitherto been attempted. From the comparative study of moult in other groups of birds, I am convinced that this is the proper point from which to view the subject in order to comprehend its full significance.

The fact that the plumage of any bird at a given time is simply one of a series following each other during the bird's natural life, is obvious when it is remembered that each new feather grows from the same papilla as the old one. Plumage, which is an assemblage of feathers, would be very simple to understand if all the papillæ were equally active at a period of moult, but as a matter of fact, individual papillæ, as well as whole groups of them, may remain dormant and thus produce the mixed plumages that have been so difficult to understand in many species of birds.

As some feathers, chiefly in young birds, may survive several periods of moult without being renewed, it follows that a recognized stage of plumage may consist of feathers developed at no less than two or three separate periods, and besides this the plumage will be modified by the wear and tear to which it has been exposed. That there is a definite sequence of plumages and of moults is a fundamental fact of the greatest importance and goes far to explain problems of plumage which may be found either among the Grouse or among distantly related birds.

The exact method of moulting in the Tetraonidæ has been understood none too well, and there are some details the significance of which has been quite overlooked. There are nearly forty species and subspecies of these birds distributed among ten genera accredited to North America, and although there is great diversity in relative size and in the patterns and colors of their plumage, they differ little in their moults, which conform quite closely to those of other birds. In an article now in press (Annals N. Y. Acad. Sci., XIII, 1900, pp. 1– —, pll. i–vii.), I have shown in considerable detail how the moult of Passerine species is effected, new feathers first appearing at definite central points in the different feather tracts or pterylæ. The growth of new feathers spreads so that outer rows and extremities of tracts are normally last to be renewed. This systematic replacement, which proceeds so gradually that birds are usually not deprived of power of flight nor of protective feathering, is also apparent in the Grouse and Quails, due allowance being made for differences of pterylosis. These differences have been so exhaustively treated in a recent paper by Mr. Hubert M. Clark (Proc. U. S. Nat. Mus., XXI, 1898, pp. 641–653, pll. xlvii–xlix) that I need say nothing more upon the subject except later on to designate briefly the points at which new growth begins and the areas over which it spreads at different periods of moult.

In my earlier study of Passerine species, extending over a number of years, I reached conclusions that have enabled me to formulate some fundamental principles governing plumage and moult which my later study of the Tetraonidæ and other groups bears out in every particular. As the application of these principles will explain every plumage and every moult, I present them here before going farther. They are as follows: —

I. Every species has a definite sequence of plumages and of moults.

II. Moult is periodical systematic feather growth.

III. Moult is complete or incomplete.

IV. Plumage is renewed by moult.

V. Plumage is modified by wear.

A word has already been said about each species having a definite series of plumages and of moults. This is found to be true of every species of Grouse and every species of Quail, plumage being renewed by feather-growth at definite periods while between them it is subjected to all the destructive influences of abrasion and fading which I have summed up under the word wear. It has been possible for me to reach these conclusions by an examination of the large series of Tetraonidæ in the American Museum of Natural History, thanks to the kindness of the Curator of Zoölogy, Dr. J. A. Allen, who has afforded me every facility. I must confess that the study of moult from museum skins presents many difficulties. The loss of feathers from the birds when fresh and the crowding together of parts of the skin, especially of the wings, obliterates many details or renders their demonstration impossible without serious mutilation of the specimens when once dried. Fortunately a few specimens of *Colinus*, *Dendragapus* and *Bonasa* in my own collection were studied before they were skinned so that I am able in a measure to make up the serious shortcomings of dried skins.

Before taking up the Grouse and Quails individually it will be well first to consider their moults in general and then discuss their plumages, the same fundamental principles being applicable to all of them.

Among the Tetraonidæ two distinct periods of moult may be recognized in adults and two others in young birds occurring shortly after they leave the nest. The one which occurs in adults at the end of the breeding season is complete, just as it is in all species of North American birds, and is known as the Postnuptial Moult; the other, which is seldom complete in any species and in the Tetraonidæ chiefly confined to a very limited area of the head and throat, is known as the Prenuptial Moult. In the Quails the prenuptial moult includes very little beyond the sides of the head

and the black, white or brown chin area, as the case may be, while in females the renewal is still more restricted or even suppressed. In the Grouse, I can find little satisfactory evidence of prenuptial moult beyond the growth of a few feathers about the chin, except in *Lagopus*, which has the most extensive renewal of any of the Quails or the Grouse. It is extremely easy to overlook an incomplete and restricted prenuptial moult, for all members of the family being game-birds, they are protected by law during most of the year and very few specimens taken at or just after this period of moult have found their way into collections. There is, however, unquestionable evidence, that this moult takes place in several species during April and May, and probably it is characteristic of all of them.

Lagopus alone is peculiar in having an extra or supplementary postnuptial moult. The conditions of life under which this Arctic bird lives perhaps necessitates this extra moult, which is not, however, confined to this genus but appears to be a regular feature in the moult of certain Anatidæ. It is a true moult involving the brown or dusky portion of the plumage already wholly renewed by the regular and complete postnuptial. It will be discussed more fully later.

Adults, then, have two periods of moult in most if not all of the species, while young birds also have two periods of moult, one when they doff the downy plumage in which they leave the egg, the Postnatal Moult, the other when they assume winter plumage, the Postjuvenal Moult. All species of Grouse and Quails at the latter moult assume a plumage scarcely distinguishable from that of the adult. This is true in a large measure even of *Lagopus* but here again we find an extra moult supplementary to the postjuvenal, and, as in the adult, limited in extent.

In speaking of moult the idea of periodicity must be borne in mind. New growth which occurs at any time when one or more feathers are torn out is simply an accident. At every period of moult feather growth begins at definite points and spreads systematically from them. This is what always happens at any one of the series of moults peculiar to each species. If the moult be incomplete, the new growth ceases before it has spread to its usual limits, and very often stray feathers in its path are left over

until another period. There are all degrees of suppression in the extent of the areas involved by a moult which is partial, like the prenuptial, and females always renew more limited areas than do the males. The postnuptial moult seldom leaves a trace of the old plumage, nor as a rule do the complete moults of young birds of any species to whatever family they may belong.

A table that I prepared to show the relations existing between plumages and moults among Passerine species is with slight modification applicable to the Grouse and Quails. It is as follows:

Plumages.	*Moults.*
1. Natal	Postnatal
2. Juvenal	Postjuvenal
3. First Winter	First Prenuptial
4. First Nuptial	First Postnuptial
5. Second Winter (adult)	Second Prenuptial (adult)
6. Second Nuptial (adult)	Second Postnuptial (adult)
etc., etc.,	etc., etc.

This scheme distinguishes a series of plumages followed by moults which may be complete, partial, or even suppressed according to species, age, sex and individual. It permits of a plumage being called adult whenever evidences of immaturity are lost, and it is applicable to the Tetraonidæ by recognizing, in the exceptional case of *Lagopus*, the supplementary postjuvenal and postnuptial moults which produce the white supplementary winter plumage. In all the other Grouse and their allies the scheme is without exception, save the probability that the prenuptial moult is suppressed in some of them. More material must be examined to determine this, for as the feathers of these birds suffer comparatively little wear, owing to their structure, it is easy to overlook a prenuptial moult limited to a few feathers about the head.

A better understanding of the development of the different plumages at the periods of moult will be gained by taking each up in the order in which it appears: —

1. *Natal Down.* — The early history of this first stage of plumage must be sought within the egg, but we need only begin at the time when the chick emerges from the shell. The young of all the Tetraonidæ are densely covered at this stage with a downy plumage. Upon the individual feathers of this down,

which among other birds varies in structure according to family, several names have been bestowed, one of the latest being neossoptile, in contradistinction to teleoptile, the name applicable to every later feather (see Gadow, Newton's Dictionary of Birds, 1893, p. 243), although Mr. Wm. Palmer proposes the name mesoptile for the first feather which succeeds to the neossoptile. (See Fur Seals and Fur Seal Islands of the North Pacific Ocean, 1899, part III, p. 424.) The structure of the natal down resembles that of the barbs or rami of the succeeding feathers with which its filaments are continuous, being gathered into bundles at the apices of the new feathers. All the Grouse and Quails at this stage are very similar, being everywhere yellowish or grayish and immaculate below, and mottled on the back and head with various shades of chestnut and black, with a dusky mark behind the eye. There is a sort of a ruff on the nape, and in species which later have a crest, a tuft of longer down may mark the spot where it will appear. The chicks run about almost as soon as they are hatched, and within a few days begin to show signs of the succeeding plumage, which is rapidly assumed by a complete postnatal moult. It is of the utmost importance to follow the development of this second plumage, to which I have given the name juvenal.

2. *Juvenal Plumage.* — The first signs of this second stage (the feathers of which have been called mesoptiles and differ in structure from the teleoptiles of adults) will be found near the middle of each wing, where the remiges and their coverts appear extending in both directions from the carpus so that the distal and the proximal members of the series are latest in their development. It is well to notice here that in all subsequent moults involving the wings the progress of the moult corresponds approximately in matter of time to the order of development here indicated. The first tract to show any moult is usually the alar, beginning with the proximal primary (always the tenth among the Grouse and Quails), the moult proceeding distally, until about four primaries have fallen out when it proceeds proximally towards the body. The Tetraonidæ have one striking characteristic that seems to have been generally overlooked. The two distal primaries do not develop until the rest of the series of remiges (except the

innermost secondaries) is well developed, and their growth is so slow that the primary adjacent (the third) is often free of the persistent scale-like sheath, the remains of its follicle, before the quills of these two feathers have lost their pulpy look. In consequence of this, the postjuvenal moult, beginning with the loss of the tenth primary often before they are grown, reaches them in some cases before they have lost their signs of immaturity. They are not moulted, but retained for a twelvemonth, while the rest of the remiges are renewed by the postjuvenal moult. The distal pairs of primaries therefore belong to the juvenal plumage, while the rest are truly a part of the first winter dress. This peculiarity is not at all striking among the brown-quilled species, but in *Lagopus* it has doubtless occasioned some of the misunderstandings that have prevailed regarding the moult of the Ptarmigans. In these birds the two distal primaries are white when first developed, while the rest of the remiges are brown until renewed by white ones at the postjuvenal moult.

The next point at which new feather growth begins in the chick is on either side of the breast, spreading backwards along the sides, and a little later new feathers appear on the back at the root of the neck, upon the middle of the crown, and at the middle part of the humeral and femoral tracts. The tendency is to spread backwards with new points of departure anteriorly on the forehead, throat, chin and sides of the head, and posteriorly on the rump, flanks and abdomen. The wing-coverts reach their full development in advance of the remiges and before the body plumage, the greater and lesser in advance of the median, and the upper coverts before the lower. The chin and throat, sides of the head, neck, mid-abdomen and tarsi are late in losing the downy plumage and the rectrices are also late in their development. The same relative order of renewal is observable in later moults, plumage being renewed in very nearly the same order in which it originally grew. Renewal is very systematic in birds and if certain feathers of a tract or of a series have already been moulted, it is not difficult to predict when and where the next feather will have its place taken by a new one, provided the laws which govern moult, the distribution of the feather tracts and the peculiarities of species under consideration are known.

It is almost impossible to assign a time for the acquisition of the juvenal plumage. Birds about one third grown will still have downy chins, foreheads and abdomen and the tail barely showing, while the plumage elswhere is well developed, except the opposite ends of the row of remiges, where the quills are only partly grown. At about this time, the first signs of the postjuvenal moult may be found in the replacement of the tenth primary by a new one, the first of the winter plumage. This moult may involve five or six primaries before it is noticeable upon the body at either side of the breast. Birds are about one half grown when this point of development is reached, perhaps three weeks or so old.

The tendency is for the juvenal plumage to resemble somewhat that of the adult female, the sexes, as a rule, not being certainly distinguishable, both wearing, for instance in the crested species, a crest that is usually brown, which in the adult would be black. All colors are apt to be duller than those of the next plumage, more uniformly colored, sometimes slightly barred or mottled feathers preceding the rich tints of the winter dress, which is practically alike in the young and old of nearly all species.

3. *First Winter Plumage.* — This third stage is reached by a postjuvenal moult which is complete except for the retention of the two distal primaries of each wing, and the plumage assumed is scarcely to be distinguished in any of the species from that of the adults in winter plumage. The completeness of the postjuvenal moult and the early acquisition of adult plumage simplifies all questions of plumage except in the Ptarmigans. They, however, assume a dress which is white except upon the head, throat, outer part of the sides and the back. The supplementary postjuvenal moult peculiar to them follows quickly and involves only the feathers of the dark areas. As the postjuvenal itself is scarcely complete before the supplementary one begins, it is not surprising that a plumage made up of feathers of three different periods of growth should have given rise to much discussion in explanation of the phases of dress through which these birds pass, there being a preliminary and a supplementary stage of the winter plumage. The difficulty is to draw the line between the different stages of plumage which, especially in the young bird, almost insensibly blend one into the other.

Any autumn bird that shows remains of the follicles about the two distal primaries and one or two mature feathers intervening between them and newly developed primaries further on in the series may always be set down as a young bird. In the adult the moult proceeds uniformly from the tenth to the first, so that if the two distal show immaturity and the remainder are all fully grown, the bird may be set down as an adult. This is true of all the Quails and all the Grouse.

The first winter plumage assumed, according to species, during September, October and November, is worn until the following April or May and in the case of the Ptarmigans of northern latitudes even into June, when either a prenuptial moult of limited extent takes place or a bird may be said to have passed into first nuptial plumage without moult, and by wear alone.

4. *First Nuptial Plumage.* — This is a fourth stage which is chiefly the first winter plumage plus an inconspicuous amount of wear, but a limited prenuptial moult renews a small part of the old plumage. The Quails and Grouse, most of them, assume new feathers limited to the throat patch of white, black or buff, which come in of very nearly the same color and pattern as the old, and to the sides of the head and forehead. The Ptarmigans assume dark feathers over larger areas, only the wings, tail, abdomen and flanks remaining white, but the individual variation is considerable.

This dress is commonly known as the breeding plumage. Just as soon as a pair of birds have started their brood in life, they undergo the first postnuptial moult, the male beginning the process in advance of the female. The Arctic Ptarmigans may begin early in July, the Grouse and the Quails usually in August or perhaps September, in some cases. This moult is invariably complete with the possible exception of a few feathers, and the slight differences between old and young which may have persisted up to this period are now practically obliterated and all subsequent plumages may be called adult. The year old Ptarmigans, like the birds of the previous autumn, assume a plumage reddish or dusky over the superior and anterior regions of the body, and a supplementary first postnuptial moult takes place by which the dark areas are renewed by white.

5. *Second or Adult Winter Plumage.* — As I have just pointed

out, this fifth stage is reached through the first postnuptial moult, the Ptarmigans alone assuming a supplementary winter dress by an extra moult of limited extent. Differences of plumage between young and old now wholly vanish, except that at later moults, with age, colors are supposed to deepen, but the actual age of a bird becomes a matter of conjecture. Birds in this dress can be told from birds of the year by osteological and histological characters, but there is often nothing characteristic in their plumage.

6. *Second or Adult Nuptial Plumage.*— Like the first nuptial this plumage may be only that of the winter plus wear (as it is in many females) or it may be partly renewed by an incomplete prenuptial moult confined to insignificant areas about the head, or, in the case of the Ptarmigans, extending over larger areas. It may be distinguished from the first nuptial in a very few cases only and passes into that of the third winter by a complete postnuptial moult.

So it is that plumages and moults will follow each other during the lifetime of a bird and a full comprehension of the systematic and harmonious workings of natural fundamental laws will go far towards dispelling the hazy ideas that have prevailed regarding both plumage and moult.

II. Moult of the Individual Species.

Colinus virginianus (*Linn.*). BOB-WHITE.

Natal Down.— Above chiefly chestnut, buff on sides of head with black streak behind the eye. Below grayish buff, palest on chin, browner on the sides. There is a dearth of specimens showing the transition into the next plumage.

Juvenal Plumage, acquired by a complete postjuvenal moult. Above dull brown, the feathers with white shaft-lines widening at the tip, the feathers of the nape and back with terminal black spots on the inner webs; crown dusky, gray laterally without shaft-lines, rump pale brown with faint whitish edgings. Wings and tail dull mouse gray with pale buff-mottled edgings on the primaries, whitish mottling on the rectrices; the secondaries and

their coverts a dull reddish brown indistinctly barred with buff bordered with dull black, the inner members black terminally edged with rich buff. Below dull gray on throat, breast and sides, the feathers with white shaft-streaks, the abdomen dull white and the chin clear white bordered posteriorly with the dusky tipped buff feathers of a throat band. Broad line below eye dull black, lores and superciliary stripe dull white or buff. Males are apt to be richer colored than are females and with grayer tails, whiter chins, blacker throat bands and often a slight dusky barring on the breast. A half dozen birds in my own collection show the change into first winter dress. No. 883, ♂, Connecticut, Oct. 22, and No. 2044, ♀, Connecticut, Oct. 5, have not yet entirely lost the natal down of the chin. They have recently lost the tenth and ninth primaries, the new ones of the winter dress being mere pin points. In neither of them have the two distal primaries pushed much beyond their follicles and in No. 2044 the third has barely reached its full development; otherwise they are in full juvenal dress. Nos. 2041, ♂, 2042, ♂, and 2043, ♀, Connecticut, Oct. 5, are further advanced, still having the white throats of the juvenal but with four primaries and a few body feathers of the winter dress. No. 6236, ♀?, New York, Oct. 21, and No. 6759, ♂, New York, Oct. 17, are still further advanced, the only remaining remiges of the juvenal dress being the second, third and fourth and the sixteenth to the twenty-fourth, together with the distal pair, as yet not fully grown. The winter plumage is coming in at the usual points on the body.

First Winter Plumage, acquired by a complete postjuvenal moult excepting the distal pairs of primaries of each wing. Young birds and old become practically indistinguishable although the young bird tends to less barring below and the white has a buff tinge, the colors above being duller with paler edgings. In the male the white juvenal chin is replaced by a purer white, in the female by a rich buff, the sexes now being distinctly differentiated for the first time. I have several specimens in my collection completing the postjuvenal moult. No. 860, ♀, Connecticut, Oct. 10, is in full winter body plumage, the first and second primaries show no evidences of growth, the third is old and the fourth a mere pin point, the fifth nearly grown and the rest of

the series new. They differ from the juvenal quills in being edged with pinkish buff; the rectrices, largely grown, are clear gray with little or none of the white mottling of the juvenal dress No. 6262, ♀, New York, November 4, is at abc . . same stage of development, the tail and chin rather less advanced. It is hardly necessary to cite specifically other specimens, as the changes I have indicated are perfectly demonstrated by those already referred to by number.

First Nuptial Plumage. — This is evidently acquired by a very limited or incomplete prenuptial moult occurring in May. New feathers of the same color and pattern as the old grow upon the white chin, including its black border, and upon the sides of the head and the forehead. Birds taken at the right season to show this are extremely rare in collections, as it is contrary to law to shoot game birds out of season. There are three specimens, however (Amer. Mus. Nos. 25876, ♂, and 26493, ♀, Pennsylvania, May, and No. 55354, ♂, South Carolina, June 4), showing new growth, which is doubtless of regular occurrence.

Second or Adult Winter Plumage, acquired by a complete postnuptial moult chiefly in September. A male in my collection, No. 2040, Connecticut, Oct. 5, is in nearly full winter plumage, the three outer primaries old and worn, the fourth only about one half grown, while the rectrices and some feathers of the chin are not yet fully developed.

Second or Adult Nuptial Plumage, acquired by a partial prenuptial moult, as in the young bird. It is hardly necessary to refer to this and later plumages, which are simply repetitions of each other, one for summer and one for winter. Wear is not an important factor and produces no appreciable effect upon the plumage, most of which is worn for an entire year.

Colinus virginianus floridanus (*Coues*). FLORIDA BOB-WHITE.

The plumages and moults are like those of *virginianus*, the prenuptial moult occurring somewhat earlier in the season. Most of the specimens I have seen are winter birds, taken not later than March, before the prenuptial moult would be expected to occur. However, a male from Nassau, Bahama Islands (Amer.

Mus. No. 35471, March 22) shows considerable renewal about the forehead, sides of head, chin, and jugulum, and several Florida birds in Mr. Sennett's collection show new growth in April and May.

Colinus virginianus texanus (*Lawr.*). TEXAN BOB-WHITE.

The plumages and moults evidently correspond to those of *virginianus*. Two males taken at Corpus Christi, Texas (Amer. Mus. Nat. Hist., No. 55001, April 22, and No. 55002, April 24) both show new feathers growing about the chin and head and a number of specimens in the collection of Mr. George B. Sennett show a prenuptial moult, extending from March into May. The juvenal plumage is browner than in *virginianus*.

Colinus ridgwayi *Brewster*. MASKED BOB-WHITE.

The material examined is not sufficient to enable me to reach any positive conclusions. The ruddy breast and black throat are evidently assumed at the postjuvenal moult.

Oreortyx pictus (*Dougl.*). MOUNTAIN PARTRIDGE.
" " **plumiferus** (*Gould*). PLUMED PARTRIDGE.
" " **confinis** *Anthony*. SAN PEDRO PARTRIDGE.

The material I have examined is limited but conclusive, showing the different stages occurring as follows:

Natal Down. — A broad stripe of rich chestnut runs from the forehead to the tail bordered on either side by narrow pale buff stripes, the sides and wings being mottled with dusky chestnut; a dark line behind the eye. Below uniform yellowish white, palest on the chin and buff on the sides of the head. A specimen of *pictus* in my collection (No. 4947, Oregon, May 27) has the middle members of the remiges just developing with the tuft of natal down at their apices. The distal pairs are not in view. Another bird representing *plumiferus* (No. 3897, ♀, Fresno County, California, August 4) is more advanced though still a mere chick and retaining natal down on head and throat.

Juvenal Plumage, acquired by a complete postnatal moult.

Above grayish brown with dark markings and dull white speckling, the neck and head clear gray with a little white speckling; crest dull brown with indistinct buff barring. Below gray with whitish edgings, chin chiefly white, the flanks and crissum chestnut tinged. Sexes practically alike. Two birds in my collection, No. 3895, ♂, Tacumba Valley, California, July 4, and No. 3896, ♀, San Gabriel Mts., California, Aug. 4, have assumed a few body feathers of the first winter dress. In neither are the two distal primaries fully developed while the postjuvenal moult has advanced from the tenth to the sixth. The rich brown feathers of the winter dress have begun to appear on the flanks, their origin being the sides of the breast.

First Winter Plumage, acquired by a complete postjuvenal moult, except the distal pairs of primaries. Birds become practically indistinguishable from adults and the females not very different from the males but with duller colors and smaller, browner crests.

First Nuptial Plumage. — The material examined does not show whether a prenuptial moult takes place or not. It probably does and is limited to the head as in the other Partridges.

Later plumages are but repetitions of the last two.

Callipepla squamata (*Vig.*). SCALED PARTRIDGE.
" " **castanogastris** (*Brewst.*). CHESTNUT-BELLIED SCALED PARTRIDGE.

I have examined about 150 specimens of these two forms, which show the plumages and moults at nearly all stages. Fading is more apparent than in any of the Quails.

Natal Down. — Several specimens have partly assumed the juvenal dress but the down of the head and throat indicates a brown dress mottled above and whitish below.

Juvenal Plumage, acquired by a complete postnatal moult. Above similar to *C. californica* but paler and more streaked, below grayer mottled with dull white. Numerous specimens show the change into the next plumage.

First Winter Plumage, acquired by a complete postjuvenal moult, excepting the two outer primaries, as is usual in this

family. Young and old become indistinguishable and males and females may now be told apart by the plumage for the first time.

First Nuptial Plumage, acquired by an incomplete prenuptial moult restricted to the head and throat, an occasional new feather showing elsewhere. There are a number of birds of both sexes with new feather growth apparent in April and May.

Second or Adult Winter Plumage, acquired by a complete postnuptial moult which is well illustrated by specimens; a male from Arizona (Am. Mus. No. 56526, August 15) has renewed seven primaries and eight secondaries, together with half grown median rectrices, and much of the body plumage except part of breast, nape, head, throat and chin and some of the back and rump; two females from the same locality (Am. Mus. No. 56527, Aug. 26, and No. 56529, Sept. 6) are both less advanced, only the ninth and tenth primaries being new. Later plumages and moults are repetitions of earlier ones.

Callipepla californica (*Shaw*). CALIFORNIA PARTRIDGE.
" " **vallicola** *Ridg.* VALLEY PARTRIDGE.

The two forms of this bird are fairly represented by specimens I have examined.

Downy Plumage.— Above, rich brown, mottled on the sides with dusky brown; a dark line behind the eye. Below, dull white somewhat tinged with buff. The form *vallicola* is possibly grayer at this stage. The chicks are not very obviously different from those of *Oreortyx*.

Juvenal Plumage, acquired by a complete postnatal moult. Above grayish brown with dusky and whitish edgings on the back and wing-coverts; nape gray with faint whitish shaft-streaks and dusky edgings. Below, gray with whitish edgings, producing a barred effect. A California bird (Amer. Mus. No. 61062, ♀, July 3) still retains the downy head, the first or distal primary is a mere pin feather, the second is half grown, the third and fourth show remains of their follicles, and the rest are grown except the inner members of the series. A female (Amer. Mus. No. 61063,

July 3) is much farther advanced, the chin being clothed, the under wing-coverts replacing the down, the dusky chestnut crest appearing, and the renewal of the remiges by the postjuvenal moult has involved the sixth to the fifteenth of the remiges.

First Winter Plumage, acquired by a complete postjuvenal moult, excepting the two distal primaries. Young birds are now scarcely distinguishable from adults, the colors, however, are not so deep.

First Nuptial Plumage, acquired by a partial prenuptial moult, limited to the fore parts of the head and throat. Several California specimens, male and female, illustrate this (Am. Mus. No. 61053, ♂, May 7, No. 61055, ♂, May 9, No. 61058, ♂, May 20, and No. 61059, ♀, May 23).

Later plumages are only repetitions of winter and summer dress.

Callipepla gambeli (*Gambel*). GAMBEL'S PARTRIDGE.

A fine series of about 150 specimens examined illustrates all the plumages and moults of this species.

Natal Down. — Very similar to *Callipepla californica*. Above, the crown is pale brown bordered by pale buff lateral stripes, the back nearly black and a dusky line behind the eye. Below, dull white, sides of head and an indistinct collar buff. A chick (Amer. Mus. No. 51426, Arizona, June 6) shows eight of the ten primaries just breaking from their follicles, most of the secondaries being at a similar stage of development.

Juvenal Plumage, acquired by a complete postnatal moult. Until the plumage of the nape appears the birds are almost indistinguishable from *Callipepla californica*. This region is then uniformly gray with more distinct shaft-streaks and no dusky borders as in *californica*. A number of specimens show different stages of this plumage. Two especially (Amer. Mus. No. 29619, ♂, Arizona, July 9, and No. 51413, ♀, July 12) show the juvenal plumage well advanced and the postjuvenal moult, beginning with the tenth primary before the first and second are nearly grown.

First Winter Plumage, acquired by a complete postjuvenal moult, excepting the two distal primaries. Young and old become

indistinguishable, males assuming the black throat and crest, females the browner dress. A male (Amer. Mus. No. 29637, Arizona, October 11) is acquiring a few black feathers of the chin patch and the chestnut feathers of the flanks, while the postjuvenal moult in the wing has reached the sixth primary, the two distal still retaining their follicles. A female (Amer. Mus. No. 29634, Arizona, October 9) is largely in first winter plumage, the only old feathers of the remiges being the third and the three proximal; a new blue-gray tail has replaced the mottled one of the juvenal plumage.

First Nuptial Plumage, acquired by a partial prenuptial moult limited to the anterior parts of the head and throat. Numerous specimens illustrate it. The black throat and its white border are renewed by feathers of the same color. The moult appears to take place in Arizona towards the end of April.

Second or Adult Winter Plumage, acquired by a complete postnuptial moult.

Later plumages are like those already described.

Cyrtonyx montezumæ (*Vig.*). MASSENA PARTRIDGE.

A fine series of twenty-seven specimens illustrates well the different plumages, especially of the young bird.

Natal Down. — Above chestnut or rusty brown, in the median line, mottled with dull black and bordered with buff; a dusky line behind the eye. Below dull white, palest on the chin.

Juvenal Plumage, acquired by a complete postnatal moult. Both sexes now resemble the adult female, being streaked, but without the pinkish tint of the back and are black-spotted below with white shaft-streaks. A male (Amer. Mus. No. 58934, Arizona, September 12) still shows down on the throat and sides of the head. The juvenal rectrices are partly grown, the primaries are pulpy, the distal pair not yet visible, and the inner secondaries are still only partly developed. A female (Amer. Mus. No. 56536, Mexico, October 12) has assumed the dull white throat of the juvenal dress and shows the postjuvenal moult, which has already involved the seventh to the thirteenth of the remiges; the distal pair are not yet fully grown. Several other specimens show

the transition into first winter plumage (Amer. Mus. No. 29612, ♀, Arizona, Nov. 1; No. 56538, ♂, Mexico, Sept. 19, and others).

First Winter Plumage, acquired by a complete postjuvenal moult excepting the two distal primaries.

One male is in nearly full plumage (Amer. Mus. No. 35225, Arizona, November 20), the first and second primaries full grown, the third one half and the remainder of the series new except one or two of the proximal secondaries. Males assume the rich and beautiful plumage of the adult, now first being distinctly differentiated from the females which are streaked and spotted and decidedly pinkish.

First Nuptial Plumage. — There is a limited prenuptial moult as shown by specimens in Mr. Geo. B. Sennett's series.

Subsequent plumages are only repetitions of those already described.

(*To be concluded.*)

REPORT OF THE A. O. U. COMMITTEE ON PROTECTION OF NORTH AMERICAN BIRDS.

THE YEAR just passed has been a most important one to those interested in the furthering of bird protection, particularly to the members of your Committee.

During the years 1896 and 1897, largely through the personal efforts of Mr. Wm. Dutcher, then chairman of this Committee, the cause of bird protection was brought prominently before women's clubs and similar organizations in all parts of the country, with a view to arousing a general interest in the subject and bringing it to the attention of the general public. The success which attended these efforts was shown in Mr. Dutcher's reports and in the voluminous correspondence of your Committee during the year covered by our last report. Audubon Societies, organized for bird protection and the encouragement of bird study, have sprung up on every hand, and nearly every

person in touch with the public press is to-day acquainted with the movement for the protection of wild birds and their exclusion from millinery. The matter has also extended to the schools with most encouraging results.

While we cannot expect immediate success in all our efforts for bird protection, the arousal and extension of this sentiment will ultimately accomplish the desired end, and even to-day so widespread is the interest in wild bird life that no serious outrage can be perpetrated without arousing a host of protests.

So rapid had been the growth of the Audubon Societies, and so great the demand upon your Committee, that we recommended in the last report the establishment of a magazine which should be the organ of these societies and serve as a means of keeping the immense membership in touch with their work. The idea was realized almost at once by the appearance of 'Bird-Lore,' ably edited by Frank M. Chapman, which has fully justified the highest expectations of its advocates. The Audubon Society department, under the direction of Mrs. Mabel Osgood Wright, serves to unite these organizations and forms, as it were, a central bureau of information upon this line of work. This relieves your Committee of a great burden of correspondence which it must soon have been quite unable to attend to, and permits it to turn its attention to general matters which belong more strictly to its scope.

We may therefore refer those interested in the Audubon Societies to the pages of 'Bird-Lore,' merely saying that these organizations have continued to increase both in influence and membership, and that since our last report additional State Societies have been established in Tennessee, Texas, and California.

The establishment of a central publication office for Audubon Society literature is still as much desired as ever; but unfortunately no serious attempt has as yet been made in this direction. The inclination seems stronger than ever and we trust that some definite steps will be taken at an early date.

Probably at no time since the organization of the Audubon Societies has there been such a general use of birds in millinery as during the present winter, which is another evidence of the difficulty of common sense producing any effect upon fashion. Nevertheless the protest against birds in millinery was never so

strong, especially among the rising generation, and the growing feeling on all sides that it is vulgar and in bad taste to wear birds, will inevitably make the present fashion one of short duration. Notwithstanding this, however, efforts are being constantly made by dealers to obtain birds from various parts of this country, especially where it can be done without breaking the laws.

Information has reached your Committee of large quantities of Grebe breasts collected in western America, and of offers which have been made to fishermen along the New England coast to enlist their services in collecting Terns.

The recent demand for single quills has resulted in the slaughter of innumerable Hawks, Owls, Eagles, and Pelicans, and now the demand is largely supplied from the Turkey Vulture, one of the most useful and at the same time most disgusting birds that we have.

Mr. Wm. Palmer of our Committee writes me that numbers of these birds are trapped not far from Washington, D. C. They are decoyed with the carcasses of dead animals, and caught in a barrel arranged in such a way that when a Vulture alights on the side he is precipitated into it. The quills are then pulled out and the bird allowed to run. In many cases so many feathers are taken that the bird is unable to fly and probably dies.

These instances of collecting for the millinery trade in our own country serve to emphasize the need of more stringent laws for the protection of birds, and their strict enforcement. This seems to be the only means of checking the millinery collectors.

The old stories that plume hunters do not use guns but collect Egret plumes which have been cast off by the birds, and that in certain remote parts of the world Egrets are actually farmed(!) have been recently revived and published in journals where they have attracted widespread attention, and seriously hindered the work of the Audubon Societies. We need only say that there is no foundation for either statement. Any ornithologist who knows the habits of the Egret or any person who has visited their haunts will testify to the absurdity of these stories.

During the past year your chairman has taken up another matter of great importance, the question of excessive collecting of birds, and more especially of eggs, for alleged scientific purposes.

Without wishing to object in the slightest to the collecting of such specimens as are needed for scientific purposes, or for even small collections as assistance to field work, a protest was made in the last annual report against excessive collecting as a business, or on the part of those who collect merely for the sake of having a large collection, and contribute little or nothing to our knowledge of birds. For the benefit of young bird students, who are often influenced by dealers in their ideas of what constitutes ornithology, a circular was prepared on the above lines in which were combined the opinions of the ornithologists of all the larger scientific institutions of the East. Ten thousand of these were published, with the generous assistance of the Pennsylvania Audubon Society, and distributed in all parts of the country. This circular, and the stand taken by your committee, has been endorsed by all the ornithological journals of America, and ornithologists generally, and its beneficial effect is already in evidence.

From the reports of the various members of your committee for the past year, I quote the following: —

Mr. Dutcher of our committee reports that he endeavored to proceed against dealers in native cage birds in New York City, but failed, owing to the impossibility to prove that the birds were actually trapped in New York, the dealers claiming that they were secured in Florida.

Mrs. Robins reports great success in interesting constables in the enforcement of the game and bird laws. In many States it is possible to have constables appointed as special game wardens, and if the matter is properly explained to them, the pecuniary benefits are quite sufficient inducement to enlist their assistance in the cause of bird protection. True sportsmen do not break game or bird laws, and the punishment of a few promiscuous shooters will soon suppress an objectionable class.

Mrs. Olive Thorne Miller reports increasing interest in popular bird study in every part of the country that she has visited, and in many schools where the children are specially instructed in observing wild birds.

Miss Florence A. Merriam especially emphasizes this last fact, and considers the instruction of teachers in the rudiments of popular ornithology a most important work.

Dr. T. S. Palmer reports the enactment of a new game law in the District of Columbia, March 3, 1899, which increased the penalty for killing insectivorous birds, and provided for the inspection of cold storage rooms under certain restrictions. He also reports the successful organization of classes for ornithological instruction among the school teachers of Washington, which were conducted by himself and Mr. H. C. Oberholser, with the coöperation of Prof. Wm. B. Powell, superintendent of schools. The Biological Survey has also done most valuable educational work in the distribution of papers and circulars on Economic Ornithology.

Mr. A. W. Anthony reports that a recent visit to Magdalena Bay, Lower California, shows the almost total destruction of the Herons by plume hunters and native Indians. This work was begun some four years ago, as previously reported, and the encouragement of plume collecting among the Indians has proved most disastrous. Mr. Anthony reports that the extensive sheep grazing in Plumas County, Cal., and elsewhere on the Sierra Nevada, seems to result in the extermination of the Sooty Grouse, Plumed Partridge, and other ground birds, as the sheep trample both young and nests under foot. Furthermore, the sheep-herders burn the underbrush over large tracts, and thus work great havoc on the birds. Though this is against the law, it is almost impossible to prevent it for lack of definite evidence.

This instance is quite parallel to the destruction by fire of vast tracts of lumbered regions or bark peelings in the forests of Pennsylvania and other States, and the almost total destruction of the forest-loving birds which formerly abounded there and would doubtless remain were the tracts allowed to grow up properly protected from fire.

Visits to the Pennsylvania lumber regions during 1898 and 1899 deeply impressed your chairman with the importance of the work of the Forestry Commissions and its close association with the question of bird protection.

Mrs. Stevenson reports that during the past winter, when an unusual influx of Robins occurred in Arkansas, the gunners turned out in numbers, and though many birds were killed the first day, the arrest and conviction of a dozen or so of the would-be

'sportsmen' completely checked the slaughter in the vicinity of Helena.

In Washington, D. C., Dr. T. S. Palmer reports the arrest of one of the principal game-dealers for selling Robins, which has resulted in stopping the traffic in that city to a great extent.

Mr. Geo. H. Mackay, although resigned from the Committee, has continued his excellent work in the interests of bird protection in Massachusetts, both in looking after the Terns on the islands and in legislative work. His most encouraging report is an evidence of what can be done by a competent person who has the interest of bird protection so much at heart. His report is here appended.

"In the matter of legislation something has been gained; one very important law has been enacted which is already showing good results, viz., 'That every Lord's day shall be close season; whoever hunts, kills or destroys game or birds of any kind on the Lord's day shall be liable to the penalties imposed for the violation of the law during other close seasons, and such penalties shall be in addition to those already imposed for the violation of the laws relating to shooting upon the Lord's day.' Still another law has been passed creating for five years a large reservation within the limits of the town of Essex, Mass., within which birds and animals are protected. In addition a most vicious marketmen's bill was defeated after a hard contest, as also another bill which sought to extend the open season on the Mergansers, or Sheldrakes. Five other protective bills, including my own, failed to secure favorable legislation, although a strong effort, accompanied by forcible and exhaustive arguments, was made in their behalf. There is no necessity, however, for the abandonment of the effort on this account, for it is visible to those who can read the handwriting on the wall that it is only a question of time when such protective bills will be successful, and while some of those who are at present engaged in the work may not see the realization, they are, nevertheless, preparing the ground and paving the way for those who may follow them. In all of the above bills I have taken an active part, being present and speaking for better protection.

"The Terns and Laughing Gulls domiciled during the breeding

season in Massachusetts have been well cared for, as usual, and although I understand an unusually large number of these birds has been killed during the past year for millinery purposes and decoration, I can safely state that *not one* has been taken for such purposes on any of the islands under my care. Owing to the continued disability of Mr. John Sandsbury, I was obliged at the last moment to find another person to fill the position of special police officer for the Muskeget group of islands. Mr. Edward E. Snow of Nantucket was selected, and was considerately appointed by the town of Nantucket to protect the birds during the past season. As might be expected, the result continues to show increasing numbers of Terns and Laughing Gulls in this locality, and each year an earlier date of arrival would seem to indicate their impatience to reach this secure breeding resort. When I look back to former years, and compare their situation then with what it is at present, I am sure we shall have no complaints from the birds' standpoint.

"On Penikese Island, in Buzzards Bay, Mass., the owners, Messrs. Homer Bros., have extended the same courtesy and aid to me as heretofore in furthering my plans, and it gives me much pleasure to acknowledge such indispensable help.

"Early in the year an effort was made by a society called the 'American Bird Restorers,' to reduce the numbers of House Sparrows (*Passer domesticus*) in Boston. I took no part in this movement. The effort met with widespread opposition and resistance, and the daily newspapers were teeming for weeks with literature on the subject. Little was accomplished, however, as far as a diminution of birds was concerned, and after the excitement waned the matter became quiescent. It brought out one fact, however, viz., that even the most despised birds have hosts of friends and protectors ready to champion their cause, regardless of merit."

In conclusion your Committee may say that with the establishment of the Audubon Societies and 'Bird-Lore' their work has been materially relieved, but they still stand as a central committee for the diffusion of information on any subjects upon which they may be consulted, and would especially urge upon the members of the Union the importance of their assistance in taking

advantage of every opportunity of securing the passage of good bird laws, and the enforcement of the same; and in the instruction of those who are in a position to encourage bird study among the children, and in directing young ornithologists into the true paths of ornithological research.

Respectfully submitted,

WITMER STONE,
Chairman.

SEVENTEENTH CONGRESS OF THE AMERICAN ORNITHOLOGISTS' UNION.

THE SEVENTEENTH CONGRESS of the American Ornithologists' Union convened in Philadelphia, Pa., Monday evening, November 13, 1899. The business meeting was held in the Council Room, and the public sessions, commencing Tuesday, November 14, and lasting three days, were held in the lecture hall of the Academy of Natural Sciences.

BUSINESS SESSION. — The meeting was called to order by Vice-President Merriam, in the absence of the President, Prof. Robert Ridgway. Sixteen active members were present. The Secretary's report gave the membership of the Union at the opening of the present Congress as 744, constituted as follows: Active, 48; Honorary, 17; Corresponding, 66; Associate, 613.

During the year the Union lost forty-six members — four by death, thirteen by resignation, and twenty-nine were dropped for non-payment of dues. The members lost by death were John Cordeaux,[1] a Corresponding member, who died at Lincoln, England, August 1, 1899, in the 69th year of his age; also Oliver Marcy,[2] LL. D., Dean of Northwestern University, who died at Evanston, Ill., March 19, 1899, aged 79; Major Joshua L. Fowler,[3] U. S. A., who died on board the Steamer 'Ella,' July 11,

[1] For an obituary notice, see Auk, XVI, pp. 377, 378.
[2] For an obituary notice, see *Ibid.*, p. 211.
[3] For an obituary notice, see *Ibid.*, p. 377.

1899, while returning home from Cuba, aged 53 years; and W. W. Colburn, of Springfield, Mass., aged 60 years, Associates.

The report of the Treasurer showed the finances of the Union to be in a satisfactory condition.

Robert Ridgway was reëlected President; Dr. C. Hart Merriam and Charles B. Cory, Vice-Presidents; John H. Sage, Secretary; William Dutcher, Treasurer. Charles F. Batchelder, Frank M. Chapman, Ruthven Deane, Witmer Stone, Drs. A. K. Fisher, Jonathan Dwight, Jr., and Thomas S. Roberts, were elected members of the Council. Messrs. W. R. Ogilvie Grant, and Arthur Humble Evans, of England, were elected to Corresponding Membership, and eighty-five new members were added to the list of Associates. As in previous years many of the new Associates were women. The usual reports of Standing Committees were received.

PUBLIC SESSION. *First Day.* — The meeting was called to order by Vice-President Merriam. A letter was read from Miss Juliette A. Owen, of St. Joseph, Mo., an Associate Member, donating $100 to the Union, to be devoted to any ornithological purpose that might seem fitting to the Council. Miss Owen wrote that the amount sent was about the cost of the journey she expected to take in order to attend the Congress, but was prevented from going. The sum received will be the nucleus of a fund which it is hoped may be secured, the income to be used for the advancement of the science of ornithology.

Mr. Witmer Stone, Chairman of the 'Committee on Protection of North American Birds,' then read the report of his committee for the previous year. The report is published in this number of 'The Auk,' and will be issued as a pamphlet to be sold at a very low price for general distribution.

The reading of scientific papers began by the presentation by Mr. Frank M. Chapman of a paper 'On the plumages of certain Boreal Birds,' followed by 'The Summer Molting Plumages of Eider Ducks,' by Witmer Stone. Remarks followed by Mr. Cory, Drs. Merriam and Dwight, Messrs, Chapman, Rhoads, Palmer, Dutcher, and the author.

The opening paper of the afternoon session was by Dr. Jonathan Dwight, Jr., entitled 'The Sequence of Plumages and Molts in certain Families of North American Birds.'

The second title was 'Three years' migration data on City Hall Tower, Philadelphia,' by Mr. William L. Baily. Remarks followed by Messrs. Cory, Brewster, Saunders, Dutcher, Janney, Batchelder, Palmer, Daniel and Howe, Dr. Merriam and the author.

The third title was 'The Ranges of *Hylocichla fuscescens* and *Hylocichla f. salicicola*,' by Reginald Heber Howe, Jr. Remarks followed by Dr. Dwight.

The concluding paper of the afternoon was by Mr. Frank C. Kirkwood 'On the occurrence of the Egyptian Goose (*Chenalopex ægyptiaca*) in North America.'

Second Day. — The meeting was called to order by Vice-President Merriam.

'A Quantitative Study of Variation in the Smaller American Shrikes,' by R. M. Strong, was the first paper of the morning. Remarks followed by Dr. Dwight and the author.

The second title was 'An Oregon Fish Hawk Colony,' by Vernon Bailey.

Next came 'Further Remarks on the Relationships of the Grackles of the subgenus *Quiscalus*,' by Frank M. Chapman. Remarks followed by Mr. William Palmer.

The fourth title was 'A Peculiar Sparrow Hawk,' by William Palmer. Remarks followed by Mr. Fuertes.

The last paper of the afternoon was 'The Requirements of a Faunal List,' by W. E. Clyde Todd.

Mr. Louis Agassiz Fuertes then exhibited and explained a series of field sketches made by him in Alaska the past season from absolutely fresh birds. They showed the true life colors of the soft parts, mostly in the breeding season.

At the opening of the afternoon session Dr. Allen read, by request, a letter from Herbert Brown, of Yuma, Arizona, contradicting certain statements respecting the alleged existence of Egret farms in Arizona.

Mr. Witmer Stone then read 'Audubon's Letters to Baird, compiled from copies of the originals kindly furnished by Miss Lucy H. Baird.' These covered the period from the reply to the inquiry of the lad Baird, then of Carlisle, Pa., concerning the identity of a Flycatcher, until after the return of Audubon from

the Missouri River in 1843. The letters are of great historic interest and show the warm feeling of the older naturalist toward his young friend and companion.

The next title was the 'Bering Sea Arctic Snowflake (*Passerina hyperborea*) on its breeding grounds,' by Dr. C. Hart Merriam.

The remaining papers of the afternoon, all illustrated by lantern slides, were as follows:

'An Account of the nesting of Franklin's Gull (*Larus franklinii*) in Southern Minnesota,' by Dr. Thos. S. Roberts.

'Bird Studies with a Camera,' by Frank M. Chapman.

'Home Life of Some Birds,' by William Dutcher.

'The Effects of wear upon Feathers,' by Dr. Jonathan Dwight, Jr.

'Slides — Series of Kingfishers, Gulls, etc.,' by William L. Baily.

Third Day. — The meeting was called to order by Vice-President Merriam. Before proceeding to the reading of papers, resolutions were adopted, thanking the Academy of Natural Sciences for the use of a hall for a place of meeting for the Union, and for other courtesies extended; to the Philadelphia members of the Union for their cordial welcome and many hospitalities shown visiting members; to the Zoölogical Society of Philadelphia for its kind invitation to visit the Gardens of the Society; to Dr. W. P. Wilson, Director, for his polite invitation to the members of the Union to visit the Export Exposition; to Governor Pingree, of Michigan, and Mayor Maybury, of Detroit, for their cordial invitation to the Union to hold its next Congress in Detroit; to Miss Juliette A. Owen, of St. Joseph, Mo., for the gift of one hundred dollars to the Union, to be expended as deemed best by the Council, and to Mr. W. H. Wetherell, the owner of the property, for his polite invitation to the members of the Union to visit Mill Grove, the former home of John James Audubon.

As the first paper of the morning Dr. A. K. Fisher made 'Remarks on some of the more interesting birds of the Harriman Alaska Expedition.' The notes of many of the birds referred to were imitated by Mr. Fuertes, also a member of the Harriman party.

The second title, 'On the Orientation of Birds,' by Capt. Gabriel Reynaud, of the French Army was read in part, in the absence of the author, by Mr. Chapman. Remarks followed by Dr. Allen and Messrs. Chapman, Dutcher, Morris, Palmer, and Stone.

Next came 'The Molt of the Flight-feathers in Various Orders of Birds,' by Witmer Stone. Remarks followed by Mr. Chapman.

The fourth title was 'Notes on the Flammulated Screech Owls,' by Harry C. Oberholser. Remarks followed by Mr. Hindshaw and the author.

The fifth title was 'Language of the Birds,' by Nelson R. Wood.

The opening paper of the afternoon session (Vice-President Cory in the Chair) was by Mr. Harry C. Oberholser, entitled 'A New Wren from Alaska.'

The next title was 'Some Cuban Birds,' by John W. Daniel, Jr. Remarks followed by the Chair and the author.

Mr. Louis Agassiz Fuertes then gave, by special request, imitations of the notes of wild birds. Remarks followed by Messrs. Hindshaw, Stone, and Fuertes.

The seventh and concluding paper, 'On the Perfected Plumage of *Somateria spectabilis*,' by Arthur H. Norton, was read in part by Mr. Witmer Stone, in the absence of the author.

Mr. Stone, then exhibited and called attention to numerous specimens of Arctic birds in young plumages collected by Edward A. McIlhenny.

An honored visitor to the daily sessions was Dr. Samuel W. Woodhouse, of Philadelphia, who made explorations in New Mexico and Arizona in the early fifties. Woodhouse's Jay (*Aphelocoma woodhouseii*) was named after him more than forty years ago by Prof. Baird.

On Friday, November 17, after adjournment of the Union, at the invitation of Mr. W. H. Wetherell, owner of the property, Mr. George Spencer Morris conducted a party to Mill Grove, on the Perkiomen, the former home of Audubon. Mrs. Morris F. Tyler, of New Haven, Conn., wife of the treasurer of Yale University, a granddaughter of Audubon, was a member of the party.

The next meeting of the Union will be held in Cambridge, Mass., commencing November 12, 1900.

The attendance of members at the recent Congress was much larger than at any previous one. They came from distant parts of the United States and from Canada.

JNO. H. SAGE,
Secretary.

GENERAL NOTES.

A Rare Record for Eastern Long Island.—On October 7, 1899, I received a fine specimen of the Fork-tailed or Sabine's Gull (*Xema sabinii*). It was shot the day before in Gardiners Bay, between Orient, L. I., and Shelter Island, and sent me in the flesh. It was the only one seen. It was in young-of-the-year plumage, and on dissection proved to be a female. It was in excellent condition, with a thick layer of fat all over the body. The stomach contained an entire cut-worm moth (*Agrotis*), and the macerated remains of other insects, picked up, without doubt, from the water where they had fallen exhausted, having wandered from the land. The above, so far as I am aware, is a new record for Long Island, and the farthest south for the species under consideration.—W. W. WORTHINGTON, *Shelter Island Heights, N. Y.*

Some Notes on the Herring Gull (*Larus argentatus*).—The evidence that there is no such bird as *Larus argentatus smithsonianus* continues to accumulate. Doubts of the validity of this subspecies have been expressed before, both orally and in print. (*Cf.* Knight, List of Birds of Me., p. 19; Maine Sportsman, July, '98, p. 13; Journal of the Me. Orn. Soc., Oct. 1899, p. 37). These records refer to the occurrence in Maine of specimens referable to *L. argentatus*, and finally question the existence of any subspecific differences between American and European specimens. While in Portland a short time ago I had occasion to visit the shop of a local taxidermist and noticed a large number of these birds which he had skinned for sale to milliners. After carefully examining fully 100 specimens, which had been shot in Portland Harbor and vicinity, I was delighted to find ten specimens which were, as regards the first primaries, typical examples of *L. argentatus*. Three of the birds had the first primary entirely white at the tip without any trace of a black bar or dot, and the others had the black bar only slightly indicated. Other specimens had the black bar more complete, and a perfect series of gradations could be found between adult birds with

only white on the apical part of the first primary and birds having a black bar half an inch wide near its extremity. The non-existence of the so-called subspecies *L. a. smithsonianus* seems to be completely demonstrated. At the same time I had the opportunity of examining a large number of Kittiwake Gulls and found a greater variation in their primaries than in those of the Herring Gull. In both cases specimens examined for comparative purposes were adult birds. — ORA W. KNIGHT, *Bangor, Me.*

The Occurrence of the Egyptian Goose in North America. — It gives me great pleasure to bring to the attention of the American Ornithologists' Union a specimen of the Egyptian Goose (*Chenalopex ægyptiacus*) shot on Dec. 5, 1898, at Havre de Grace, Md. I received the bird in the flesh on the 10th, through the kindness of Walter T. Jackson of that place, who sent the following note with it: — "Shot by John Simpers along shore 100 yards from Point Concord Light, Havre de Grace, Md. Two other birds of same species were seen the following day."

A few days later I visited Havre de Grace; John Simper was off on the 'flats,' but everyone in that duck shooting town knew of the strange bird, so I had no difficulty in hearing of it. I visited the scene of the shooting, which was a small indentation in the shore, with considerable growth in it, and a marshy piece of ground at its head; here the bird was seen early in the morning, and John Simper went for his gun, came back and shot it. With regard to the two reported as seen next day, I heard several contradictory stories, and question the identity of the birds seen.

The bird shot was in perfect plumage, and showed no signs of having ever been in confinement; the body, however, was emaciated to the last degree, and the stomach contained only two or three small gravel stones; the bird was evidently in the last stages of starvation, which would account for the remarkable tameness freely commented on at Havre de Grace.

As far as I know the only other record for this species in North America, is of one taken at Canarsie, L. I., on Jan. 3, 1877, and recorded by John Akhurst of Brooklyn, N. Y., in the Bull. Nutt. Orn. Club, Vol. II, April, 1877, p. 52. Mr. Geo. N. Lawrence, in a letter to Mr. Akhurst, stated in regard to this specimen: "Its acquisition is worthy of being noted, and whether a straggler or an escaped specimen may be ascertained in the future." Apparently this statement governed Baird, Brewer, and Ridgway in their note on the species (Water birds, p. 434), where they say "a common species in aviaries; so that it is altogether probable that the example in question [the Canarsie bird] was one escaped from confinement." Bechm's 'Thierleben' (Birds, Vol. III, 1882, p. 471), in commenting on the occurrence of this species in various European countries, says practically the same thing, but the species is generally included as a valid one in the countries where it has been taken in a state of nature.

As the species is a great wanderer I can see no reason why one or more should not occasionally cross the Atlantic. The condition in which this specimen was received certainly proved it to have been a long time without food, and being a fresh water feeder, the only way it could have reached Maryland without finding a suitable feeding place would have to be across the Atlantic. If stronger evidence cannot be brought forward against it, I see no reason why this beautiful species should not be added to the North American Fauna. — F. C. KIRKWOOD, *Baltimore, Md.*

The Occurrence of Steller's Eider (*Eniconetta stelleri*) **in the Gulf of St. Lawrence.** — We are indebted to Mr. Napoleon A. Comeau, who has done so much to increase our knowledge of the distribution of birds in the Point des Monts region of Quebec, for two records of the occurrence of Steller's Eider in the Gulf of St. Lawrence. The first specimen which he secured was a female taken on February 17, 1898, at Godbout, where it was associated with a flock of Old-squaws. The second example was a fine male, which was killed by Joseph Morin, a seal hunter, about a month later near Point des Monts. It was found among a flock of Golden-eyes. Previous to the capture of these two specimens Mr. Comeau had seen occasional individuals among flocks of well known species, which he did not recognize and had wondered if they might not be Labrador Ducks. After examining the male Steller's Eider, however, he appreciated that the birds formally observed undoubtedly belonged to the latter species.

These records are especially interesting as coming from the eastern side of the continent where the bird appears to be of accidental occurrence, and where, as far as known, it has been observed only at Disco Bay, Greenland, and Cumberland Sound. — A. K. FISHER, *Washington, D. C.*

Pipile *vs.* **Pipilo.** — If mere difference in inflexional termination of words otherwise identical in form be held insufficient for their discrimination, then *Pipile* Bp., Comptes Rendus, XLII, 1856, p. 877, is voided by *Pipilo* Vieill., Anal., 1816, p. 32, and the three current species of the former genus may be called *Cumana* (gen. nov.) *cumanensis* (Jacq., 1784), or *C. pipile* (Jacq., 1784), *C. jacutinga* (Spix, 1825), and *C. cujubi* (v. Pelz., 1858). But it may be a question whether *Pipile* and *Pipilo* are not radically distinct words. Vieillot's name is good Latin, being first person, singular, present indicative of a verb meaning 'to chirp'; while Bonaparte's may be a barbarous word of South American origin. If the latter shall so prove, how shall we dispose of the case? — ELLIOTT COUES, *Washington, D. C.*

Strix *vs.* **Aluco.** — This is a case on which the last word does not appear to have been said, and I, for one, should be glad to have it settled. It involves not only two generic, but also two family names. If I am at

fault in my present contention, I hope to be promptly set right by some one who may be able to see further into the intricate matter than I can. I will put the case in the following shape:

1. The genus *Strix* Linn., S. N., I, 10th ed., 1758, p. 92, included, of course, all Owls known to him. *S. aluco* Linn., *ibid.*, p. 93, sp. No. 6, is the Barn Owl, as shown by the references. But how does this fact make *S. aluco* of 1758 the "type" of *Strix?* There are no "types" of Linnæan genera which included more than one species, except by some subsequent process of restriction by elimination at the hands of some other author.

2. The species *Strix aluco* of Linn., S. N., I, 12th ed., 1766, p. 132, No. 7, is the Wood Owl, a bird of a different modern family from *S. aluco* of 1758.

3. Meanwhile, between the dates 1758 and 1766, the Linnæan genus *Strix* was first subdivided, by Brisson, in 1760; and Brisson made *S. stridula* the type of his restricted genus *Strix*. This act placed the Wood Owls in the genus *Strix* Briss., 1760, and threw the Barn Owls out of the genus *Strix* Linn., 1758. As a further consequence, the family to which the Wood Owl belongs is Strigidæ.

4. The first tenable generic name for the Barn Owls appears to be *Aluco*, Fleming, Philos. Zool., II, 1822, p. 236; and if so, the family to which the Barn Owls belongs is Aluconidæ.

5. It seems to me, therefore, that our two families of Owls should stand as they have stood in my 'Key' since 1884, and not as they do in the A. O. U. List.

I may add that Professor Newton, Ibis, 1876, pp. 94–104, reached the same conclusion, which he also maintained in Dict. B., 1894, p. 673. This is the more remarkable, inasmuch as he employed a somewhat different course of reasoning, not taking Linnæus back of 1766, and thus differing from the A. O. U. Code. But I think my own argument is strictly according to the Code. — ELLIOTT COUES, *Washington, D. C.*

The 'Churca' (*Geococcyx californianus*). — The 'Land of Sunshine,' XI, No. 6, Nov., 1899, contains a translation (from Docs. para la Hist. Mexico, 4th ser.) of certain Memorias para la historia natural de California, written by an anonymous Franciscan priest in the year 1790. Among the birds noted is the following:

"The *Churca* is a kind of pheasant which has a long bill, dark plumage, a handsome tail and *four feet*. It has these latter facing outward in such fashion that when it runs it leaves the track of two feet going forward and two going backward."

If we read "toes" for "feet," this quaint description is unmistakably that of the Roadrunner or Chaparral Cock, as the editor of the Magazine, Mr. Charles L. Lummis, remarks in a footnote; and the notice antedates by many years the scientific description of *Saurothera californiana* by Lesson in 1829. — ELLIOTT COUES, *Washington, D. C.*

The Red-headed Woodpecker near Chicago, Ill. — I do not think that the Red-headed Woodpecker (*Melanerpes erythrocephalus*) is as rare a winter resident in the vicinity of Chicago as Mr. Bryan seems to suppose (see Auk, XVI, July, 1899, p. 272). Years ago, when living in Racine, Wis., I remember seeing individuals of the species during several winters. They remained through the season. This was near the town, on the Lake shore, sixty miles north of Chicago. They were never at all numerous, nor was every successive year marked by their appearance. One, or perhaps two, might be seen on the coldest days. The severity of the weather made no difference. The birds were quite as likely to remain through the hardest winters as through mild and open ones. 'Birds of Michigan,' by A. J. Cook, speaks of the Red-headed Woodpecker as occasional in winter. The Geology of Wisconsin, Section Ornithology, if I remember rightly, says about the same thing.

I hope this handsome Woodpecker, the most showy of North American birds, is not diminishing in numbers. It used to be fairly abundant in New England, for instance, but now it is a rare visitant excepting, perhaps, in the remotest parts. — G. S. Mead, *San Francisco, Cal.*

Tree Swallows by the Million. — Early in September I visited the Long Beach Club at Barnegat, N. J. This club is located on that long, narrow point of land which lies between the ocean and Barnegat Bay. It is about ten miles in length and the club is located two miles from the extreme point. The width of the land here between the bay and ocean is only a few hundred feet. While there I was attracted by an extraordinary flight of Tree Swallows (*Tachycineta bicolor*) which commenced about eight o'clock each morning and lasted several hours, the birds flying always up the beach toward the inlet and never in the opposite direction. Evidently they crossed the channel and returned later in the day along the opposite shore of the bay to their night quarters. My interest in this daily flight was greatly aroused by the enormous numbers of the birds. My stay lasted but a few days, but on the 19th I again visited the club and on the morning of the 20th watched for the birds, hoping to see them again. Not a Swallow was seen until the solid column of the flight appeared, and it was at once apparent that where there were hundreds two weeks previous there were now thousands. The flight was compact like a swarm of bees and at times almost darkened the sky. Most of the time there were two distinct columns, one flying low just over the water, and the other high up in the air. I watched the flight for hours, and the air in both directions seemed alive with them as far as the eye could reach. In attempting to shoot one for identification and mounting, a single discharge of my gun killed ten birds, so compact was the flight. Two of these (evidently adult males) were in magnificent plumage, their backs fairly glistening with the most brilliant steel-blue color. Three or four others showed some color, and the rest (probably young birds) none at all. The next day I again watched the flight in company with my companion

the Hon. Clarence Lexow, of New York. A northeast gale was blowing against which the birds were flying with much difficulty. A heavy rain soon set in and the wind blew furiously, still the flight continued and it was rarely that the chain was broken, even for a few seconds. The appearance of a Sparrow Hawk among them had the effect of causing the birds to rise to a great height, but the flight was in no respect retarded. After watching the birds nearly all of the forenoon we made a careful estimate of the number that had passed and we calculated that it was not to be reckoned by tens of thousands or hundreds of thousands, but by millions. — JOHN LEWIS CHILDS, *Floral Park, N. Y.*

Intelligence of the Shrike. — When studying birds in Florida last year, I took a shot at a fine specimen of the Southern Shrike (*Lanius ludovicianus*) for the purpose of adding him to my collection. The bird flew a considerable distance, wounded, and attempted to light in the branches of a tree, but was unable to do so and fell to the ground. As I approached to pick him up, he arose from the ground, issued a cry of distress and fluttered away with great difficulty. Immediately another Butcher-bird darted out from some near-by tree, flew to its wounded companion, circled about him and underneath him, buoying him up as he was about to sink to the ground. These tactics were repeated continually, the birds rising higher and flying further away until they had gone nearly out of sight and safely lodged in the top of a tall pine. I did not pursue the bird further, feeling that such devotion and intelligent assistance on the part of the second bird was worthy of success. In all my observations of birds I never before, or since, witnessed such an interesting exhibition. — JOHN LEWIS CHILDS, *Floral Park, N. Y.*

The Bohemian Waxwing in Onondaga County, N. Y. — During the hard snow storm of Feb. 10, 1899, a flock of about 50 Cedar Waxwings were seen in a mountain ash tree, feeding on the berries. The tree is on one of the principal residence streets of Syracuse, and is thickly populated, The observer, being an amateur collector, and living but a few houses from the place, returned for his gun and shot into the flock, securing several Cedar Waxwings, and one, which was seen to drop some distance from the tree, proved to be a Bohemian Waxwing (*Ampelis garrulus*). This is the first specimen recorded from Onondaga County. It seems strange that this bird should be associated with its brother species.

I would like to know if it has been taken or recorded farther south than Syracuse, and whether these two species are in the habit of flocking together? — A. W. PERRIOR, *Syracuse, N. Y.*

Date of Discovery and Type Locality of the Mountain Mockingbird. — The formal description of *Orpheus montanus* in Townsend's Narr., 1839, App. p. 338, states that the bird "inhabits the banks of the Platte River, west of the Rocky Mountains." This is impossible, as there is no Platte

River west of the main divide of the Rocky Mountains. But another passage in the 'Narrative,' p. 70, gives the desired data to fix the date of discovery and precise locality. Writing of June 15, 1834, Townsend says: "I found here a beautiful new species of Mockingbird, which I shot and prepared"; and gives a footnote referring to the Appendix as above cited for the description. At the date in mention, N. J. Wyett's expedition, accompanied by Townsend and Nuttall, had made the South Pass over the Continental Divide on the 14th, and were about to camp on Big Sandy River, a tributary of Green River, in Wyoming. They were on the already established fur traders' route which went about S. W. from the Pass to the Big Sandy at or near the confluence of the latter with Green River. — ELLIOTT COUES, *Washington, D. C.*

Notes on Birds of Long Island.—Ardea egretta and A. candidissima.— It is a pleasure to note that both 'White Herons' are still entitled to notice among the present avifauna of Long Island, notwithstanding the continued persecution to which both species throughout the entire limits of their range have been of late years subjected, and the consequent diminution in their numbers.

Their persistent occurrence on Long Island in spite of their decline in numbers is rather remarkable and may be regarded as denoting that Long Island is an attractive feeding ground for this genus of birds. It may also be that there exists an instinct affecting certain individuals leading them to migrate in the autumn in a direction contrary to that of the species as a whole, or, that the genus is simply prone to a wandering, restless disposition. Since Mr. Dutcher's note on the former was published (Auk, III, 1, p. 435) nothing, I think, has appeared to show that either of the birds now nest on Long Island, and it seems questionable whether the birds have nested so far north since the prevailing demand for their plumes first began. Late occurrences of the two species are as follows:

During the autumn of 1897 several 'White Herons' were noted about the shores of Jamaica Bay, Queen's County, by several observers, from whom I heard of them. Chas. Ward, a gunner of Rockaway Beach, shot several on or about October 1, one of which was merely wing-tipped. This bird was preserved alive for some time, in which condition I saw it on October 9, it having then been in captivity about a week or ten days. The bird was confined in a boat builder's shop where its unnatural surroundings affected it unfavorably, as it appeared drooping and sick. It proved to be a specimen of the American Egret, *Ardea egretta*.

A flock of Snowy Herons, *Ardea candidissima*, comprising six or seven individuals, was seen on the salt meadows near East Rockaway in mid-August this year (1899). Two of these, which were wing-tipped, are now in the possession of Mr. Daniel DeMott of East Rockaway. They are at present in apparently excellent condition, established in roomy, comfortable quarters, with out-door run and with in-door shelter. Mr. DeMott

recalls having seen 'White Herons' in his locality fifteen years ago, but none since until the present summer. He writes: "The two which I now have would eat from my hand a week or two after their capture. I now have them in a yard enclosed in wire netting with a coop eight feet high attached. I notice they sit in the uppermost part of the coop most of the time during the day unless called out to be fed; but when night comes they will leave the coop and sit in the open yard until morning." The chief food of the Herons is small fish, with which they are kept abundantly supplied. Mr. DeMott has several other wild birds quartered in separate enclosures, including Black-bellied Plovers, Turnstones, and one Golden Plover, all in apparently excellent condition and comprising in all a decidedly interesting natural history exhibit.

Cathartes aura. — The geographical distribution of the Turkey Vulture is one of the most interesting facts connected with its history. Occurring regularly but a short distance south of our limits, and often seen even in the winter but fifty miles south of us (Trenton, N. J.), and being a bird of such well-known powers of flight, it yet so rarely occurs north of its regular haunts that it is as if a well recognized line demarked its limits, beyond which its occurrence is extremely singular. A bird of this species was shot at Rockaway Beach by Mr. R. L. Peavey of Brooklyn, on July 15, 1899, in whose fine collection of mounted birds it now is. Length of specimen, 29 inches; wing, 21 inches.

Accipiter atricapillus. — An immature specimen of the American Goshawk, also in the collection of Mr. R. L. Peavey, was shot by him at Rockaway Beach, Dec. 18, 1898.

Strix pratincola. — The Barn Owl is rare enough on Long Island to justify mention of each instance of its occurrence. The specimen here referred to was taken at Gardiners Island, and thus constitutes one of the more northern records for the species. Mr. E. B. Muchmore of Easthampton is the possessor of the mounted skin of this specimen. Here it was seen by the writer last summer (1899), and in reply to his inquiries concerning it, Mr. Muchmore writes: "It was picked up on Gardiners Island during the very severe weather of last March. It was very thin and had one foot broken. I should not have tried to save the specimen if it had not been a stranger to me." In a subsequent communication in reply to an inquiry regarding the remote possibility of its having drifted ashore and hence involving a suggestion of other than natural causes for its presence here, Mr. Muchmore says that it was found away from the beach and that there were no indications of its having been washed ashore. He writes: "The Barn Owl spoken of was found away from where the water could possibly have washed it ashore; and, furthermore, its condition indicated that it had not been floating in the water."

Syrnium nebulosum. — The Barred Owl is rather rare on Long Island. The present record has to do with its occurrence as a bird of the city, my attention having been attracted to it by a crowd which gathered to observe the unfamiliar sight of a large bird in the heart of the city,

sitting with every appearance of contentment in the bare branches of a tree. The small boys, however, soon began to pelt it with stones, though it was with difficulty that the bird could be made to fly, and even the presence of a policeman had little effect in restraining them.

In spite of much persecution the bird remained in the vicinity for several days more, but the commotion and excitement produced by his presence led to his premature end. Various missiles aimed at the Owl by the crowd during the day became a menace to the windows and heads and led the householders to consider the bird a rather unwelcome visitor. The bird was accordingly shot and afterward fell into my possession. The contents of the stomach, as well as beak and claws, bore testimony to the havoc which he had made the preceding night among the English Sparrows. — WILLIAM C. BRAISLIN, M. D., *Brooklyn, N. Y.*

Newfoundland Notes. — The following list of birds was observed on a trip up the Humber River in Newfoundland, which lasted from August 10 to September 24, 1899. The list is not intended as in any way a complete one of the birds to be seen at that time on the island, but merely of those which I happened to observe in the course of a fishing and hunting trip, and as such it is offered for what it may be worth.

1. **Gavia imber.** LOON. — Abundant.

2. **Larus argentatus smithsonianus.** AMERICAN HERRING GULL. — Abundant.

3. **Larus marinus.** GREAT BLACK-BACKED GULL. — Breeds sparingly at Adies Pond; doubtful if I saw any.

4. **Sterna hirundo** (or *paradisæa*). — A Tern, either Common or Arctic, was seen in considerable numbers near the mouth of the river.

5. **Merganser serrator.** RED-BREASTED MERGANSER. — Breeds abundantly.

6. **Anas obscura.** BLACK DUCK. — Breeds abundantly.

7. **Anas carolinensis.** GREEN-WINGED TEAL. — Rather uncommon. Several observed.

8. **Aythya affinis.** LESSER SCAUP DUCK. — Sept. 17, one killed at Adies Pond.

9. **Glaucionetta clangula americana.** AMERICAN GOLDEN-EYE. — Breeds abundantly.

10. **Erismatura rubida.** RUDDY DUCK. — One seen Sept. 1, at Adies Pond.

11. **Branta canadensis.** CANADA GOOSE. — Breeds commonly.

12. **Botaurus lentiginosus.** AMERICAN BITTERN. — Abundant.

13. **Gallinago delicata.** WILSON'S SNIPE. — One seen August 20.

14. **Totanus flavipes.** YELLOW-LEGS. — Abundant in late August and early September.

15. **Actitis macularia.** SPOTTED SANDPIPER. — Abundant.

16. **Circus hudsonius.** MARSH HAWK. — Rather uncommon.

17. **Accipiter velox.** SHARP-SHINNED HAWK. — Common.

18. **Buteo borealis.** RED-TAILED HAWK. — Rather uncommon.

19. **Archibuteo lagopus sancti-johannis.** AMERICAN ROUGH-LEGGED HAWK. — A guide reported seeing a large black Hawk on September 10.

20. **Haliæetus leucocephalus.** BALD EAGLE. — Common.

21. **Falco peregrinus anatum.** DUCK HAWK. — A guide described a Hawk seen August 15, which must have been this species. Said to nest on the cliffs along the river.

22. **Falco columbarius.** PIGEON HAWK. — Small Hawks were seen commonly. Some were undoubtedly of this species. Others may have been *Falco sparverius.*

23. **Pandion haliaëtus carolinensis.** FISH HAWK — Common.

24. **Bubo virginianus.** GREAT HORNED OWL. — Common.

25. **Scotiaptex cinerea.** GREAT GRAY OWL. — One seen August 23.

26. **Ceryle alcyon.** BELTED KINGFISHER. — Abundant.

27. **Dryobates villosus leucomelas.** NORTHERN HAIRY WOODPECKER. — Fairly common.

28. **Dryobates pubescens.** DOWNY WOODPECKER. — Fairly common.

29. **Picoides arcticus.** ARCTIC THREE-TOED WOODPECKER. — Common.

30. **Colaptes auratus.** FLICKER. — One seen September 9.

31. **Empidonax flaviventris.** YELLOW-BELLIED FLYCATCHER. — Two seen August 15.

32. **Perisoreus canadensis.** CANADA JAY. — Abundant and very tame.

33. **Corvus corax principalis.** NORTHERN RAVEN. — Common. Apparently it takes the place of *Corvus americanus*, which is said not to occur on Newfoundland.

34. **Scolecophagus carolinus.** RUSTY BLACKBIRD. — Fairly common.

35. **Spinus tristus.** AMERICAN GOLDFINCH. — Their characteristic note heard on several occasions, but none seen.

36. **Spinus pinus.** PINE SISKIN. — Large flocks seen commonly.

37. **Zonotrichia albicollis.** WHITE-THROATED SPARROW. — Fairly common.

38. **Junco hyemalis.** SLATE-COLORED JUNCO. — Several seen September 23.

39. **Melospiza georgiana.** SWAMP SPARROW. — Not uncommon.

40. **Passerella iliaca.** FOX SPARROW. — Two seen August 17, evidently young birds just able to fly.

41. **Vireo noveboracensis.** WHITE-EYED VIREO. — A single bird was observed for some minutes in full song, and within five or six feet, on September 8.

42. **Dendroica striata.** BLACK-POLL WARBLER. — Seen in large numbers on August 27.

43. **Dendroica palmarum hypochrysea.** YELLOW PALM WARBLER. — Seen abundantly in flocks from September 8 on.

44. **Seiurus noveboracensis.** WATER THRUSH. — Abundant.

45. **Sylvania pusilla.** WILSON'S WARBLER. — Abundant.

46. **Sitta carolinensis.** WHITE-BREASTED NUTHATCH. — Common.

47. **Sitta canadensis.** RED-BREASTED NUTHATCH. — One seen August 18.

48. **Parus atricapillus.** CHICKADEE. — Most abundant.

49. **Turdus fuscescens.** WILSON'S THRUSH. — One seen September 14.

50. **Merula migratoria.** AMERICAN ROBIN. — One seen August 31. Said to be common.

The Great Blue Heron (*Ardea herodias*) was seen abundantly in Cape Breton, but apparently does not cross the Straits into Newfoundland. — LOUIS H. PORTER, *New York City.*

RECENT LITERATURE.

Merriam's Biological Survey of Mount Shasta.[1] — "All high mountains," as Dr. Merriam remarks in his 'Introduction,' "particularly those that stand alone, are likely to throw light on the problems of geographic distribution, and are worthy of careful study. Shasta, not only because of its great altitude [14,500 feet], but even more because of its intermediate position between the Sierra and the Cascades, promised an instructive lesson, and was, therefore, chosen as a base station for part of the field work of 1898."

An introduction of eight pages contains an itinerary of the field work, the personnel of the party, a notice of previous publications on Mount Shasta, and a list of the new species described in the report — 5 plants and 8 mammals. The subtitles indicate the general character of the report, as follows: 'General Features of Shasta' (pp. 17–30); 'The Forests of Shasta' (pp. 30–46); 'Forest Fires' (pp. 46, 47); 'Slope Exposure' (pp. 47–52); 'Life Zones of Shasta' (pp. 52–68); 'The Boreal Fauna and Flora of Shasta contrasted with corresponding Faunas and Floras of the Sierra and the Cascades' (pp. 69–82); 'Efficiency of Klamath Gap as a barrier to boreal species compared with that of Pitt River and Feather River Gaps collectively' (pp. 83, 84); 'Sources of the Boreal Faunas of

[1] Results of a Biological Survey of Mount Shasta, California. By C. Hart Merriam, Chief of Division of Biological Survey. = North American Fauna, No. 16, 8vo., pp. 1–179, pll. i–v, and 46 text illustrations. U. S. Department of Agriculture, Division of Biological Survey. Washington: Government Printing Office. Published Oct. 18, 1899.

Shasta and of the Sierra and the Cascades' (pp. 85, 86); 'Mammals of Shasta' (pp. 87–107); 'Birds of Shasta and Vicinity' (109–134); 'Notes on the Distribution of Shasta Plants' (pp. 135–169); 'Index' (pp. 171–179).

In the work of exploration, Dr. Merriam was aided by Vernon Bailey, chief field naturalist of the Biological Survey, Wilfred H. Osgood, Walter K. Fisher, and Richard T. Fisher, assistants. In addition to the work on and near Shasta, three cross sections were made of the Sierra Nevada north of latitude 39°, a line was run from Black Rock Desert, Nevada, to Shasta, and from Shasta across the wild and little known mountains between Shasta and the ocean, to Humboldt Bay.

The topographical features of Shasta are illustrated by numerous half-tone cuts and plates, from photographs, and the floral and faunal features, as influenced by altitude, air currents, and slope exposures, are duly set forth and discussed. The life zones of Shasta are the Upper Sonoran, Transition, Canadian, Hudsonian, and Arctic-Alpine. "Shasta stands on a Transition zone plane, with a dilute tongue of Upper Sonoran approaching its northern base by way of Klamath and Shasta valleys. . . . The Upper Sonoran element in the region is dilute and is limited to Shasta Valley at the north base of the mountain, which it reaches by way of the Klamath country on the north and northeast. It has no connection whatever with the Upper Sonoran of the Sacramento Valley on the south." The Transition extends up to an average altitude of about 5,500 feet; the Canadian to about 7,500 feet; the Hudsonian to about timber line, or to 9,500 feet; the Alpine to about 11,000 feet, above which is the bare ice-clad summit, rising to 14,500 feet. The species of mammals, birds, and plants of the several zones are tabulated in accordance with their ranges and restrictions. The transition between zones is, of course, gradual, there being an overlapping belt between each of about 800 feet.

The list of birds of Shasta and vicinity numbers 136 species, and is based almost wholly on the observations of various members of the party made during the season of 1898, the chief data from other sources being derived from Mr. C. H. Townsend's 'Field Notes on the Mammals, Birds and Reptiles of Northern California,' published in 1887. In addition to the regular assistants already mentioned, observations on the birds are credited to Miss Florence A. Merriam and Mr. John H. Sage, who were also members of the general field party.

Dr. Merriam's report, it is needless to say, is not only a valuable contribution to our knowledge of the physical geography and the fauna and flora of Shasta, but also throws much light upon the causes, both local and general, that determine the distributional limits of species. — J. A. A.

Palmer's 'The Avifauna of Pribilof Islands.' — Among the many important contributions to the natural history of the Pribilof Islands contained in Part III of the recently issued report of the United States

Fur Seal Commission (1896–97)[1] is a report on the birds by Mr. William Palmer,[2] prepared from his own "experience and collections on the islands from May 27 to August 11, 1890, and partly from the published results of the visits of Mr. Henry W. Elliott, in 1872–73 and 1876," and also on "the literature, the collections in the United States National Museum, and from the naturalists who have visited the group in recent years. Of the 69 species here listed, 20 are apparently for the first time recorded from the islands, and a large amount of new and interesting information on the habits, changes of plumage, etc., is here for the first time published. The list, however, is necessarily "incomplete, as the winter-occurring birds have been little noted." Mr. Palmer gives an account of the topography of the islands, in relation to its influence on the distribution of the birds, with a sketch of its ornithological history, including a formal bibliography of the subject. The geographical distribution of the Pribilof birds is analyzed at length (pp. 363–369), and there are several pages (pp. 369–372) on their migration, in which Mr. Palmer gives a somewhat free rein to his imagination in supposing that the ancestors of the present bird population of the Pribilofs had, "in the remote geological past," "a more happy course over contiguous land areas which have since been submerged," to help them in their migratory journeys between the Aleutian and Hawaiian groups of islands.

The list proper occupies pp. 373–427, and contains, besides full bibliographical references to the literature of the subject, usually extended notes on their habits, abundance, and distribution in the islands, and much valuable information upon the growth, character, and changes of plumage in many of the species. This, in the case of the Cormorant, affords basis for generalizations and hypotheses regarding the evolution of the Cormorant group. The genus *Arenaria* receives extended notice, with the result that two species are recognized from North America, namely (1) *A. interpres*, the form of the Old World, found also in "western Alaska from the Aleutians to Point Barrow"; also in Greenland. "Breeds from Japan and Alaska westward around the more northern British Islands, Azores (?) [!], and Greenland." (2) *A. morinella*, in

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[1] The Fur Seals and Fur Seal Islands of the North Pacific Ocean. By David Starr Jordan, President of Leland Stanford Jr. University, Commissioner in charge of Fur-Seal Investigations of 1896–97. With the following Official Associates: Leonhard Stejneger and Frederic A. Lucas, of the U. S. National Museum; Jefferson F. Moser, Lieutenant-Commander, U. S. N., in command of the U. S. Commission Steamer 'Albatross'; Charles H. Townsend, of the U. S. Fish Commission; George A. Clark, Secretary and Stenographer; Joseph Murray, Special Agent. With special papers by other contributors. Washington: Government Printing Office. 1898 [= 1899]. 4 vols., 4to., with numerous maps, plates, aud text illustrations.

[2] *Op. cit.*, Part III, 1899, pp. 355–431, pll. xxxviii–xli.

"America from the Arctic regions north of Hudson Bay and westward to the Mackenzie River, along the Atlantic watershed, though generally coastwise, to Patagonia and the Falkland Islands. Rare on the Pacific slope. Breeds about Hudson Bay, northward and eastward." *A. morinella* (Linn.) is distinguished as smaller than *A. interpres* (Linn.) with chestnut instead of black predominating above, with more clove brown, and with orange instead of vermilion feet. Detailed descriptions of the various plumages of each form are given, with a table of comparative measurements. The name *morinella* is based on Catesby's pl. lxxii, "The Turnstone or Sea-Dottrel."

Another innovation in nomenclature is the use of the name *Hirundo erythrogastra unalaschkensis* (Gmelin) for the Alaskan Barn Swallow (p. 422). Although seen on St. George Island, no specimens appear to have taken there.

Plate xxxviii gives several views on Walrus Island, showing the breeding places of sea birds; pl. xxxix represents nine eggs of the Pacific Murre, selected to show variation in size, shape, and markings; pll. xl and xli illustrate the "development of feathers." The paper forms a valuable contribution to North American ornithology. — J. A. A.

Howe and Sturtevant's 'Birds of Rhode Island.'[1] — This is the first attempt at an exhaustive enumeration of the birds of the State of Rhode Island, and has been commendably well done. It consists of a 'Review of former publications on Rhode Island Birds, and of State Collections' (pp. 7–9); 'Migration, with List of Breeding Birds' (pp. 10–16), and an account of 'Cormorant Rock' (pp. 17–22), followed by a judiciously annotated list of the 291 species known to occur in the State. There is a supplemental list of 3 'Extirpated Species' and a 'Hypothetical List' of 10 species. The House Sparrow is included in the 291 species, and also the Painted Bunting, given as "an accidental visitant, or escaped cage bird," on the basis of a specimen taken in 1882. This latter species would have found a more fitting resting place in the Hypothetical List. The Blue Grosbeak is recorded under the head of 'Errata, Additions, etc.,' on p. 102, on the basis of a young bird taken by Mr. F. T. Jencks at Drownville, R. I., Oct. 12, 1899. It is, however, omitted from the Indexes. It is of interest to note that both the Purple and the Bronzed Grackle are given, the former as occurring in the southern and the latter in the northern portions of the State. *Ammodramus caudacutus subvirgatus*

[1] The | Birds of Rhode Island. | By Reginald Heber Howe, Jr., | Member of the Nuttall Ornithological Club, | and | Edward Sturtevant, S. B., | Instructor of Natural Science at Saint George's School, Newport. | Members of the American Ornithologists' Union. | Illustrated. | 1899. — 8vo, pp. i–iii, frontispiece and 5 halftone plates.

(p. 72) is said to be "Undoubtedly not an uncommon migrant with *A. nelsoni*," etc., which latter is, curiously, not otherwise mentioned. We have here, also, almost the only case where the changes in nomenclature made in the Ninth Supplement to the A. O. U. Check-List have not been followed in the present list.

As a whole, the list has evidently been prepared with great care and thoroughness of research. In the case of the rarer species, the original records are cited in footnotes, and there is, besides, an extended and practically complete bibliography of Rhode Island ornithology, numbering nearly two hundred entries. There are also two indexes, one for the technical names, and one for the vernacular and local names. The text is very tastefully printed, typographical errors are exceedingly few, and these are apparently all corrected in a list of errata at the close of the work. The six plates (only four of them are now first published) are pertinent of the subject, illustrating 'Purgatory,' at Middletown, where Barn Swallows breed in the rocks; Mount Hope, on Narragansett Bay; Cormorant Rock and Tern's nest; an Osprey nest; a Bank Swallow colony, and a Rose-breasted Grosbeak's nest. The work is attractive as a specimen of book-making, and in every way a credit to the authors. — J. A. A.

Newton's 'Dictionary of Birds.'[1] — The reissue of this standard work in a cheaper form, yet unabridged and unchanged as regards the matter, will place it within reach of many who could not afford the original work. The paper is thinner and the volume less bulky, and thus more convenient for use, so that the cheaper form is in this respect rather an improvement upon the original. As the character of the work has already been placed before the readers of 'The Auk,'[2] we need only call attention to the fact of its reissue at reduced cost. This is especially gratifying, there being no other work of similar character extant. Professor Newton's masterly treatment of the general subject, and Dr. Gadow's contributions on the anatomy of birds, supply a fund of information alike valuable to the specialist and the general reader, and render the 'Dictionary' a compendium of ornithology of unrivalled excellence. — J. A. A.

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[1] A Dictionary of Birds. By Alfred Newton, assisted by Hans Gadow, with contributions from Richard Lydekker, Charles S. Roy, and R. W. Shufeldt. Cheap issue, unabridged. 1 vol. 8vo, pp. 1–124, i–viii, 1–1088, map, and numerous figures in text. The Macmillan Company, 66 Fifth Ave., New York. $5.00.

[2] Vol. X, 1893, pp. 357–360; XI, 1894, pp. 56–60; XII, pp. 169, 170; XIV, 1897, pp. 234–244.

Cory's 'The Birds of Eastern North America. Part II. Land Birds.'[1] — Part II of Mr. Cory's 'Birds of Eastern North America' comprises the 'Key to the Families and Species of the Land Birds,' to which is added a list of all the birds of eastern North America. The 'Land Birds' are treated after the same plan as the 'Water Birds,' already noticed at some length in this journal (Vol. XVI, 1899, pp. 366, 367). There is the same lavishness of illustration and the same brevity of text, the illustrations in both cases forming the main basis of the work, these being so numerous and so well-chosen that the text may be considered as the thread that connects them and explains their application. In this respect the work is unique. Bills, wings, tails and feet are the parts chiefly figured, with a full-length illustration of at least one representative species for each genus. The Keys are founded primarily on size as indicated by the length of the closed wing, the land birds being divided on this basis into five 'groups,' which are subdivided into 'sections' according to the form of the bill or feet, etc.; these are subdivided, as occasion requires, on other characters.

In the order of make-up there is first an 'Index Key to Families' (pp. 131, 132); then the 'Key to Families' (pp. 133–148), in which the arrangement is wholly arbitrary, beginning with the Hummingbirds and ending with the larger game birds and the larger birds of prey. This is followed by the 'Key to the Species' (pp. 149–324), in which the families, with their genera and species, follow each other in natural sequence. The text under each is reduced to a brief statement of essential characters. Following the name of each species and subspecies is a reference by number to the 'List' that follows (pp. 325–387). This is a revised reprint of the author's previously published 'List of the Birds of Eastern North America,' which in arrangement and nomenclature follows strictly the A. O. U. Check-List. It comprises 500 species and 70 additional subspecies, all numbered consecutively, and each followed by a brief statement of its geographical range. The author in his 'Key to Families' of North American birds has certainly reduced the difficulty of identifying our birds to a minimum, and anyone so unfortunate as not to be able to identify his specimens, in any state of plumage, by Mr. Cory's 'Keys' may well give up the attempt in despair. — J. A. A.

'Avium Generum Index Alphabeticus.' — The British Ornithologists' Club has recently published "An Alphabetical Index to the Genera

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[1] The Birds | of | Eastern North America | known to occur East of the Ninetieth Meridian | — | Part II | — | Land Birds | —Key to the Families and Species | — | By | Charles B. Cory | Curator of the Department of Ornithology in the Field Columbian Museum Chicago.... | — | Special Edition printed for the | Field Columbian Museum, Chicago, Ill. | 1899. — Large 8vo, pp. i–ix, 131–387, with several hundred illustrations in the text.

adopted in the twenty-seven volumes of the Catalogue of the Birds in the British Museum," prepared by Mr. F. H. Waterhouse, under the direction of Mr. Sclater. It was originally intended for private use, but its utility became so evident that the Club decided to print it as Volume IX of its Bulletin.[1] For this decision the Club deserves the gratitude of all working ornithologists. A list of the 27 volumes, with the titles in full, and date of publication, follows the Index, separately paged. The preface to the Index contains the following, which we are sure will interest not a few of the readers of 'The Auk':

"The following Latin lines were composed by a member of the B. O. C. to commemorate the names of the eleven authors of the 'Catalogue of Birds':—

DE CATALOGI AVIUM MAGNI SCRIPTORIBUS UNDECIM.

Sharpius incepit, scripsitque volumina multa;
Seebohmus sequitur, promptus ad auxilium.
Teutonicus, zelo plenus, venit inde *Gadovus*,
*Salvinus*que bonam præbet amicus opem.
Jam *Sclaterus* adest, tria longa volumina complens,
Americanarum notus amans avium.
Expers *Hargittus* nunc Picos ordinat omnes,
*Hartertus*que sagax Cypselidas numerat.
Multum etiam pensæ *Shelleyi* profuit ardor,
Multum *Saundersi* mens operosa dedit.
Clarus ab Italiâ jam *Salvadorius* adstat,
et tandem *Grantus* fine coronat opus." — J. A. A.

Sharpe's 'Hand-List of the Genera and Species of Birds.'[2] — The present 'Hand-list' of birds is a worthy successor to that of the late George Robert Gray, published also by the Trustees of the British Museum, in the years 1869–1871, which for many years was so serviceable to working ornithologists, and which has not yet lost its usefulness. This new

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[1] Bulletin of the British Ornithologists' Club. Edited by R. Bowdler Sharpe, LL. D. — Vol. IX, Avium Generum Index Alphabeticus. London: R. H. Porter, 7 Princes Street, Cavendish Square. April, 1899. —8vo, pp. 1–31.

[2] A Hand-List | of the | Genera and Species | of | Birds | [Nomenclator Avium tum fossilium | tum viventium.] | By | R. Bowdler Sharpe, LL. D. | Assistant Keeper, Department of Zoology | British Museum | Volume I. | London: | Printed by order of the Trustees | Sold by | Longmans & Co., 39 Paternoster Row, E. C.; | B. Quaritch, 15 Piccadilly, W.; Dulau & Co., 37 Soho Square, W.; | Kegan Paul, Trench, Trübner & Co., Charing Cross Road, W. C.; | and at the | British Museum (Natural History), Cromwell Road, S. W. | 1899 | All rights reserved. — 8vo, pp. i–xxi + 1–303.

'Hand-list,' prepared by Dr. R. Bowdler Sharpe, the author of the greater part of the British Museum 'Catalogue of Birds,' has a distinct advantage over its predecessor, in the fact that in lieu of references to the original places of description of the genera and species, it is sufficient to refer only to the 'Catalogue of Birds,' on which it is avowedly based, except in the case of those described since the publication of the earlier volumes of the 'Catalogue'; in such cases reference is given to the original place of description. The 'Hand-list' is thus brought down to date, and as regards the groups embraced in the earlier volumes of the 'Catalogue,' published many years ago, forms a most valuable index to subsequent contributions to descriptive ornithology. It includes also, as an important feature, the extinct birds. On this point, says the author: "I have ventured to incorporate in what appears to me to be their natural position the extinct forms of birds; but it is difficult to discover all the descriptions of fossil birds, scattered as they are through so many publications. . . . . The work in this direction has been principally founded on the 'Catalogue of Fossil Birds,' written by Mr. R. Lydekker, F. R. S., and published by the Trustees in 1891."

"The system of classification followed in the present work," says Dr. Sharpe, "is that proposed by myself in 1891, in my address to the Second Ornithological Congress at Buda-Pest. I have seen no reason to modify the conclusions there recorded in any material degree."

The nomenclature adopted is not in all cases that of the 'Catalogue,' although the departure is mainly in the line of giving a place in the 'Hand-list' to many forms ignored in the 'Catalogue,' even when not fully endorsed by the author of the 'Hand-list,' as under the genera *Lagopus* and *Bonasa* among the Grouse, and also elsewhere. The fossil forms are distinguished by the use of antique type. We note as new genera the following: *Mezotreron*, p. 56, for *M. dohertyi* Rothsch.; *Pseudaria*, p. 131, for *Uria columba*, *U. carbo*, and *U. snowi;* and *Nannopterum*, p. 235, for *Phalacrocorax harrisi* Rothsch. *Pallasicarbo* and *Psiloscops* are given as "Coues, MSS., 1898," but both were published some months prior to the appearance of the present volume (see Osprey, III, May, 1899, p. 144).

It may be noted that there are no subgenera nor subspecies in the present work, all generic names having the status of full genera and all the 'forms' recognized under the generic names standing as full species.

Dr. Sharpe has evidently taken great pains to secure accuracy, having sent the proof-sheets of his 'Hand-list' to some twenty of the leading ornithologists in various parts of the world for their revision. He says: "I cannot too warmly express my thanks to the undermentioned ornithologists, who have revised the proof-sheets of this work, and given to it the importance of an international publication. Many of them have freely given me their original notes, have saved me from many slips, and have greatly enhanced the value of the work."

The present volume includes the Saururæ, the Rattitæ, and the Carinatæ from the Tinamiformes to the end of the Strigiformes, or the orders I–XXVI of Sharpe's classification. The printing of the second volume of this invaluable 'Hand-List' is well under way.—J. A. A.

Dubois's 'Synopsis Avium.'[1]—Part I of Dr. Dubois's 'Synopsis Avium,' or 'Nouveau Manuel d'Ornithologie,' is in reality a 'hand-list,' constructed very nearly on the plan of that of the late G. R. Gray, rather than a 'manuel' in the sense in which this term is commonly employed. The species and subspecies are numbered consecutively, but under two distinct series of numeration. Part I, comprising the Psittaci, Scansores, and Pici, consisting of 80 pages, includes 1105 species and 273 subspecies, referred to 180 genera. References are usually given to illustrations, when such exist, but rarely to place of original description, and synonyms are cited with simply the name of the author. It is evidently prepared with thoroughness and care, and its usefulness will be limited only by the plan of construction.

From the prospectus we learn that the 'Synopsis' will appear in quarterly parts, of nominally 96 pages of text, or, as in Part I, of 80 pages and a colored plate, the plate taking the place of 16 pages of text. The "several colored plates" that are to appear in the course of the work will represent new or hitherto unfigured species. The subscription price is 6 francs per part, up to the completion of the third part, when the price, for new subscribers only, will be raised to 9 francs per part. The work is to comprise about seven parts. It is beautifully printed and will be a valuable contribution to ornithological literature.—J. A. A.

Salvadori and Festa on Birds of Ecuador.[2]—This is Part I of a report on Dr. Festa's collection of birds, numbering nearly 3000 specimens and representing over 600 species, made by him during three years spent in exploring various parts of Ecuador. The present paper relates only to the Oscines, of which 165 species are enumerated. Of these 5 are described as new and 10 others are reported as new to Ecuador. The new species are (1) *Turdus conradi*, (2) *Thryophilus leucopogon*, (3) *Certhiola intermedia*, (4) *Spermophila æquatorialis*, and (5) *Cyanolyca angelæ*.

[1] Synopsis Avium. Nouveau Manuel d'Ornithologie. Par Alphonse Dubois, Docteur en Sciences, Conservateur au Musée Royal d'Histoire naturelle de Belgique, etc. Fascicule I. Psittaci, Scansores, Pici. Bruxelles: H. Lamertin, éditeur, 20 Rue du Marché-au-bois. 1899. New-York, chez M. G.-E. Stechert, 9 East 16th St. 4to, pp. 80, and 1 col. plate. Six francs, or $1.20, per part.

[2] Viaggio del Dr. Enrico Festa nell'Ecuador. T. Salvadori ed E. Festa. Uccelli, Parte prima — Passeres oscines. Boll. Mus. Zool. ed Anat. comp. d. R. Univ. di Torino, XV, N. 357, pp. 1–31, Aug. 10, 1899.

The annotations give references to previous Ecuadorian records for the species, and also the sex, date of collection and locality of the specimens, the color of the bill, etc., in life, with remarks on variations of plumage. This report on Dr. Festa's work thus forms a most important contribution to South American ornithology. — J. A. A.

Bangs on Birds from the Sierra Nevada de Santa Marta, Colombia.[1] — This is Mr. Bangs's fourth paper on the birds of this region, and relates to collections made by Mr. Wilmot W. Brown, Jr., from January to April, 1899, at altitudes varying from 3,000 to 15,000 feet. The list includes 68 species, of which 13 are described as new, namely: (1) *Pharomachrus festatus*, (2) *Metallura districta*, (3) *Ochthodiæta pernix*, (4) *Hapalocercus paulus*, (5) *Myiopatis montensis*, (6) *Pipreola aureipectus decora*, (7) *Sclerurus albigularis propinquus*, (8) *Conopophaga browni*, (9) *Scytalopus latebricola*, (10) *Haplospiza nivaria*, (11) *Cinclus rivularis*, (12) *Troglodytes monticola*, (13) *Merula albiventris fusa*. The list relates for the most part to species not previously taken by Mr. Brown, but additional specimens of some of the rarer forms are recorded. Thus an additional specimen of Mr. Bangs's *Leucuria phalerata* (figured in 'The Auk,' XVI, 1899, plate ii), previously known to Mr. Bangs only from the type, is reported. This is doubtless not a rare species at favorable localities, the American Museum of Natural History having received five specimens in a collection made by Mr. H. H. Smith in the same general region. These specimens show that the tail is not always pure white, being considerably shaded with dusky in immature birds. — J. A. A.

Pearson's Preliminary List of Birds of Chapel Hill, N. C.[2] — As the title implies, this List is put forth as only an imperfect enumeration of the birds occurring at Chapel Hill, North Carolina. The period of observation is comparatively brief, and the species listed number only 132, but include only such as have been observed and positively identified. The annotations relate mainly to the seasons and manner of occurrence of the species noted. It is therefore a good list as far as it goes, but it is unfortunately marred by careless proofreading. — J. A. A.

Kellogg's List of Biting Lice (Mallophaga) taken from North Ameri-

[1] On Some New or Rare Birds from the Sierra Nevada de Santa Marta, Colombia. By Outram Bangs. Proc. Biol. Soc. Washington, XIII, 1899, pp. 91–108. Nov. 11, 1899.

[2] Preliminary List of the Birds of Chapel Hill, N. C., with brief notes on some of the species. By T. Gilbert Pearson. Journ. of the Elisha Mitchell Sci. Soc., Vol. XVI, part 1, 1899, pp. 33–51.

can Birds and Mammals.[1] — A list of the known North American species of the order Mallophaga is not only here given, with references to the place of original description, and the name of the host, but there is also a separate list of the hosts, with the name of the species of parasite infesting each host species. The North American species thus far recorded number 282 species, representing 18 out of the 21 recognized genera of the order. Of these 264 species infest birds, and 18 are known only from mammals. Mallophagous parasites have been recorded from 257 species of North American birds, belonging to 167 genera. As 107 species of North American Mallophaga were described from European hosts, the question of their distribution is one of special interest,[2] as in many cases the same parasite is found on hosts that are not only not congeneric, but which do not occur on the same continent. Often the same species occurs on several different hosts, while not unfrequently three or more species of Mallophaga occur on the same host species, sometimes as many as eight or ten, representing as many as five genera. In some instances the same parasite has been recorded from birds differing greatly in habits, and belonging even to different orders. As the subject is of interest to both ornithologists and entomologists, it seems desirable to quote in this connection from a recent letter from Prof. Kellogg, to the present writer, as follows: "As I can only get specimens of Mallophaga from bird collectors — that is, I have not yet come to the point where I can shoot birds simply for the sake of collecting their parasites — you see what assistance the readers of 'The Auk' can be to me." He also states that he has received in this way "some specimens, and has been promised others."

In discussing elsewhere (Psyche, *l. c.*) this problem in distribution, Prof. Kellogg has thus formulated his conclusions : ".... On this fact I base my belief that the occurrence of a parasite species common to several hosts under circumstances which do not admit of the migration of the parasites from bird to bird is due to the persistence of the parasite species unchanged from the common ancestor of the two or more now distinct but closely allied bird species. With the spreading of the ancestral species, geographical races have arisen within the limits of the species which have with time and with isolation, caused by newly appearing geographical barriers due to geologic or climatic changes, come to be distinct species — species often distinguished only by superficial differences in color and markings of plumage, etc. The parasites have

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[1] A List of the Biting Lice (Mallophaga) taken from Birds and Mammals of North America. By Vernon L. Kellogg, M. S., Professor of Entomology, Leland Stanford Junior University. Proc. U. S. Nat. Mus. Vol. XXII., No. 1183, 1899, pp. 39–100.

[2] See Kellogg (V. L.), 'A Problem in Distribution,' Psyche, VII, Aug., 1898, pp. 243–247.

remained practically unaffected by the conditions which have produced the differences among the birds; the temperature of the host's body, the feathers as food, all of the environment of the parasite is practically unchanged. The parasitic species thus remains unchanged, while the ancestral *Larus* or *Anas* species becomes differentiated into a dozen or score of specific forms, all with a common parasite. If this proposed solution of the problem may be accepted, it introduces a factor into problems of distribution, where parasites are concerned, which I do not recall having seen presented before."—J. A. A.

Thompson on the Cranial Osteology of the Parrots.[1]—"To discover anatomical characters such as might yield or help to yield a natural classification of the Parrots has been the desire of many ornithologists, but the search has availed little."

Professor Thompson's line of research is a detailed study of the quadrate, the auditory region, and particularly of the orbital ring as regards its completeness or incompleteness, and the cranial bones taking part in its formation. These are the lachrymal, or prefrontal as Prof. Thompson prefers to call it, the postorbital or postfrontal, and the squamosal, and the changes are so rung that when a suborbital ring is present it may be formed by the prefrontal and postfrontal, the prefrontal and squamosal, or, as in the Cockatoos, all three may unite, thus forming a supratemporal fossa. The conditions prevailing in many members of the various families and subfamilies admitted by Mivart are discussed in considerable detail, but while additional emphasis is given to the family rights of *Stringops* and *Nestor*, Prof. Thompson has given us no summary of his own conclusions, leaving us to make our own applications of the points he has given. The paper is most valuable, embodying as it does the results of long study, but it again emphasizes the familiar fact that among birds minor structural variations are so great that it is practically impossible to find any one character by means of which even small groups may be separated.—F. A. L.

Lange's 'Our Native Birds, How to Protect them and Attract them to Our Homes.'[2]—As the title explains, this is a popular bird book on rather new lines, it being devoted to an exposition of how to protect birds and to promote their increase in the vicinity of our homes. The first section of the work relates to the decrease in both song and game birds and

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[1] On Characteristic Points in the Cranial Osteology of the Parrots. By D'Arcy W. Thompson, C. B., F. Z. S. Proc. Zool. Soc. London, Jan., 1899.

[2] Our Native Birds | How to Protect them and Attract | them to our Homes | By | D. Lange | author of "Handbook of Nature Study" | Instructor in Nature Study in the Public Schools | of St. Paul, Minnesota | With Illustrations | New York | The Macmillan Company | London: Macmillan & Co., Ltd. | 1899 | All rights reserved.—12mo, pp. xii + 162. $1.00.

the various causes, preventable and otherwise, which have led to this sad result. Section IV treats of the protection of song birds, and suggests various means for promoting their increase, particularly in the vicinity of our homes. The titles of the chapters under this section indicate the means suggested, as follows: Chapter I. 'By furnishing them Trees, Vines, and Shrubs. Flowers for Hummingbirds. General Suggestions for Tree-planting for Birds. Rural Schools and Nature.' Chapter II. 'Provide Nesting-boxes. Do not cut down every Hollow-tree.' Chapter III. 'Provide Drinking and Bathing Fountains.' Chapter IV. 'Feeding Birds in Winter and in unfavorable weather at other seasons.' Chapter V. 'Miscellaneous. Dust Baths, Gravel, and Lime.' Chapter VI. 'Protecting Birds from their Natural Enemies.' Chapter VII. 'The English Sparrow Question.' Chapter VIII. 'Birds on Hats, Boys, Collectors, So-called Bird Students, Bird Hunters, Ubiquitous Gunners.' Chapter IX. 'Song Birds as Food.' Sections V and VI relate to 'Education and the Birds'; especially to the awakening of an intelligent and kindly interest in birds on the part of school children, through 'bird day' exercises in schools, and by other means. 'The Birds before Uncle Sam' is a contribution to a bird day program, in which 'Uncle Sam' is supposed to hear the complaints of the birds and to give judgment in their behalf, the birds being personated by boys and girls in appropriate costumes. Section VIII discusses 'Game Protection from the Nature Lover's Point of View'; and the concluding Section IX gives a variety of useful information about magazines more or less devoted to bird protection, the care and protection of forests, and allied topics; Audubon Societies, Game Protective and Humane Associations, a list, with addresses; the U. S. Department of Agriculture, its various divisions, their work and publications; list of Agricultural Experiment Stations in the United States and Canada; and, finally, a list of books helpful to beginners in bird study. The work is thus novel in conception, and should be extremely helpful to those interested in the development of nature study in schools and in the education of the general public. It also not only urges bird protection but furnishes suggestions in respect to providing food and favorable breeding places for birds whose surroundings have become more or less untenable through the necessary changes in environment due to man's agency. — J. A. A.

Macpherson's 'History of Fowling.'[1] — A bibliographical notice of 'The Literature of Fowling' occupies pp. xiii–xxv of the 'Introduction,'

[1] A | History of Fowling | being an account of the many curious | devices by which Wild Birds are or | have been captured in different parts of the world | By the | Rev. H. A. Macpherson, M. A. | Member of the British Ornithologists' Union, author of | "The Fauna of Lakeland," etc., joint author of | "The Fur and Feather Series," etc. | [Vignette.] Edinburgh: David Douglas | MDCCCXCVII. | All rights reserved. — Large 8vo, pp. liv+511, pll. v, and nearly 200 text figures.

and is followed (pp. xxv–xl) by a historical résumé of 'The Art of Fowling.' In the main body of the work (pp. 1–502) the subject matter is arranged systematically, beginning with the Corvidæ and ending with the Apterygidæ.

The art of fowling dates from the highest antiquity, its origin being prehistoric, and is as characteristic of barbarous tribes in remote islands and inaccessible regions as of civilized nations. The means vary with the species of bird it is desired to capture, both among wild tribes and in civilized countries. For the most part, however, fowling is a thing of the past; while it flourished in Europe in early times and is still practiced here and there as an amusement or for profit, "the Italians appear to be almost the only European people who still regard the resources of fowling as affording a prime amusement, to be enjoyed by all classes as opportunity permits." Among the more important devices employed are traps and snares, in great variety, and bird lime and nets, also of various kinds. Mr. Macpherson has brought together a vast amount of curious and interesting information, relating to almost all countries and peoples, and to all classes of birds from Larks and Sparrows to Water Fowl and Ostriches. His pages are also enriched with abundant illustrations, showing the nature and use of the multifarious devices employed for entrapping wild birds. Many of these are reproductions from old works on fowling, but many are after original designs, prepared especially for the present volume. A wide field is here well covered, the author having bestowed upon his task much time and a vast amount of careful research. — J. A. A.[1]

Mrs. Wright's 'Wabeno, the Magician.'[2] — This is another of Mrs. Wright's admirable nature books for the young, in which the phenomena of nature, both animate and inanimate, are explained in the delightfully informal and seductive way so characteristic of the author of 'Tommy-Anne,' of which deservedly popular work this is the happy sequel. While treating of nature in a broad sense, it is rather more than incidentally ornithological, the birds, the beasts, the insects, and the plants, and the forces of nature receiving about equal attention. — J. A. A.

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[1] This work was received in November, 1897, but by accident was mislaid and overlooked for two years, which explains the much regretted lateness of this notice.

[2] Wabeno the Magician. | The Sequel to | "Tommy-Anne and the Three Hearts" | By | Mabel Osgood Wright | Author of "Birdcraft," "The Friendship of Nature" | etc., etc. | Illustrated | by Joseph M. Gleeson | New York | The Macmillan Company | London: Macmillan & Co., Ltd. 1899. All rights reserved. — 8vo, pp. xi+346. $1.50.

Bumpus, on 'The Elimination of the Unfit.'[1] — Professor Bumpus has availed himself of the opportunity to contribute to the establishment of the hypothesis of natural selection by the use of material furnished to his hands by the great storm of Feb. 1, 1898, at Providence, R. I., in the form of 136 House Sparrows which, as victims of the storm, were brought to the Anatomical Laboratory of Brown University. Of these 72 revived and 64 perished. A careful study of these birds by means of detailed measurement, as of length, alar extent, the length of head, humerus, femur, tibio-tarsus, etc., revealed the fact that in the birds that died a larger proportion departed from the average or normal standard in one or more ways than was the case among those that survived. Hence Prof. Bumpus concludes: (1) .... that the birds which perished, perished not through accident, but because they did not possess certain structural characters which would have enabled them to withstand the severity of the test imposed by nature; they were eliminated because they were unfit. (2) The process of relative elimination is most severe with extremely variable individuals, no matter in what direction the variations may occur. It is quite as dangerous to be conspicuously above a certain standard of organic excellence as it is to be conspicuously below the standard. It is the *type* that nature favors. (3) Disregard of structural qualifications finally produces a throng of degenerates, whose destruction will follow the arrival of adversity." The data on which the conclusions rest are presented in detail, mostly in the form of tabulated measurements. — J. A. A.

Whitman on 'Animal Behavior.'[2] — In his very suggestive paper on 'Animal Behavior' Professor Whitman has made a most valuable contribution to the subject of Instinct and its relation to Intelligence. It is the outcome of elaborate and most careful study of the 'behavior of animals,' both of low and of high organization, as the leeches of the genus *Clepsine*, of the large fresh water salamander of the genus *Necturus*, and various species of Pigeons. The behavior of these different animals under varying conditions is detailed at length, and its meaning and bearing on the origin and relations of instinct and intelligence are most lucidly discussed, in connection with the leading hypotheses on the subject.

Not long since it was a more or less generally accepted theory that instincts were simply inherited habits. Recently, as Prof. Whitman notes, this theory has been abandoned as inadequate by some of its

[1] The Elimination of the Unfit as illustrated by the Introduced Sparrow, *Passer domesticus*. A Fourth Contribution to the Study of Variation. By Hermon C. Bumpus, Biological Lectures delivered at the Marine Biological Laboratory of Wood's Holl. Session of 1897 and 1898 (1899) pp. 209–226.

[2] Animal Behavior. By C. O. Whitman. Biological Lectures of the Marine Biological Laboratory, Wood's Holl, Mass., 1898 (1899), pp. 285–338.

former chief advocates, who have come to adopt the view that instinct is a product of evolution. We have not space to go over the evidence at length, but would commend to those interested Prof. Whitman's able exposition of the subject. From his summary of the subject, we quote somewhat at length. Under the heading 'A Few General Statements' (pp. 328–331), he says:

"1. Instinct and structure are to be studied from the common standpoint of phyletic descent. . . . Instincts are evolved rather than involved (stereotyped by repetition and transmission), and the key to their genetic history is to be sought in their more general rather than in their later and incidental uses.

"2. The primary roots of instincts reach back to the constitutional properties of protoplasm, and their evolution runs, in general, parallel with organogeny. As the genesis of organs takes its departure from the elementary structure of protoplasm, so does the genesis of instincts proceed from the fundamental functions of protoplasm. Primordial organs and instincts are alike few in number and generally persistent. . . .

"3. Remembering that structural bases are relatively few and permanent as compared with external morphological characters, we can readily understand why, for example, five hundred different species of wild pigeons should all have a few common undifferentiated instincts, such as drinking without raising the head, the cock's time of incubating from about 10 A. M. to about 4 P. M., etc. . . .

"5. Instinct precedes intelligence both in ontogeny and phylogeny, and it has furnished all the structural foundations employed by intelligence. In social development also instinct predominates in the earlier, intelligence in the later stages.

"6. Since instinct supplied at least the earlier rudiments of brain and nerve, since instinct and mind work with the same mechanisms and in the same channels, and since instinctive action is *gradually* superceded by intelligent action, we are compelled to regard instinct as the actual germ of mind.

"7. The automatism, into which habit and intelligence may lapse, seems explicable, in a general way, as due more to the preorganization of instinct than to mechanical repetition. . . . Habits appear as the uses of instinct organization which have been learned by experience. . . .

"9. We are apt to contrast the extremes of instinct and intelligence — to emphasize the blindness and inflexibility of the one with the consciousness of the other. It is like contrasting the extremes of light and dark and forgetting all the transitional degrees of twilight. . . . Instinct is blind, so is the highest human wisdom blind. The distinction is one of degree. . . ."

Prof. Whitman's experiments with various species of Pigeons, which he has made the subject of special investigation in this connection, are of the highest interest and we regret lack of space prevents our summarizing them in the present review. — J. A. A.

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NOTES AND NEWS.

Dr. Elliott Coues died at the Johns Hopkins Hospital, Baltimore, Md., Dec. 25, 1899, as the result of a grave surgical operation performed on Dec. 6, after several months of seriously impaired health, at the age of 57 years.

Dr. Coues was not only one of the Founders of the American Ornithologists' Union, but one of the self-constituted committee of three that sent out the call for a congress of ornithologists that resulted in the founding of the Union. He was at one time its President, and always one of the most valued and influential members of its Council, and of the Committee on the Nomenclature and classification of North American Birds, drafting considerable portions of its 'Code of Nomenclature,' and acting with the Committee in the preparation of both editions of the Check-List and its various Supplements. As an all-around ornithologist, his position was in the first rank of the cultivators of this science, and his influence upon the progress of technical ornithology in America is second only to that of the late Professor Baird, of whom he was a pupil; while in popularizing the subject his influence has been far greater than that of any other writer. His 'Key to North American Birds,' published in 1872, was a popular handbook that opened an easy path to would-be students of ornithology. His enthusiasm, remarkable facility of expression, vivacity of style and originality of thought always enlivened his writings, however technical the subject, and imparted to his bird biographies a charm and vividness few writers can hope to attain.

It is with the deepest sorrow that we have to record the loss of one so eminent in the annals of our science, while still at the height of his powers; his death will be felt as a personal loss by all the members of our Union and as a grave loss to our science. He was kind-hearted and helpful, of great tenacity of purpose, impulsive and imaginative, sometimes aggressive, and not always discreet in his methods of controversy. His capacity for work was almost phenomenal, and there was a decided touch of genius in his mental organism. His friendships were firm and lasting, and he did not easily forget an injury, whether fancied or real.

In accordance with a standing order of the Union respecting deceased Active Members (see Auk, XII, p. 199), a special memorial of his life and work will be presented at the next meeting of the American Ornithologists' Union, and published later in 'The Auk.'

Dr. D. Webster Prentiss, one of the Founders of the American Ornithologists' Union, and for twelve years an Active Member, died at his home in Washington, D. C., Nov. 19, 1899, at the age of 56 years. Owing to failing health, he resigned his Active Membership in 1895, and

on the acceptance of his resignation he was reelected as a Corresponding Member.

Dr. Prentiss was born in Washington in 1843, and was a graduate of the Columbian University and of the University of Pennsylvania, where he took his medical degree. He served with distinction as a surgeon in the civil war, and later became one of the best known and ablest physicians of Washington. For many years he also held the chair of Materia Medica and Therapeutics in the Columbian Medical College, which he filled with marked ability, and was beloved and reverenced by his students. He published much on medicine and surgery, and was a good naturalist. His chief ornithological publication was 'A List of Birds ascertained to inhabit the District of Columbia,' etc. (1862), with Dr. Coues, a second edition of which, under the title 'Avifauna Columbiana,' appeared in 1883. He never lost his interest in ornithology, but the exacting demands of his profession prevented his devoting much time to strictly ornithological work.

Mr. W. W. Colburn, an Associate Member of the American Ornithologists' Union, died suddenly of heart failure at his home in Springfield, Mass., Oct. 17, 1899, at the age of 60 years. Mr. Colburn was born at New Boston, N. H., and was graduated from Dartmouth College in 1861. Later he was a teacher in the Lawrence Academy at Groton, Mass. For twelve years he was principal of the High School at Manchester, N. H., and in 1874 became principal of the High School at Springfield, Mass., which position he held till 1890. After his retirement he received private pupils and conducted classes in natural history. He was greatly respected, and one of Springfield's best loved citizens, taking a prominent part in the social and educational life of the city. "He was perhaps the best ornithologist of the section, and his services in spreading popular instruction concerning our songbirds and in awakening a sentiment against their destruction and their use in millinery had been most valuable. He had been president of the Peabody Society, which has for its aim the protection of our native birds." In conjunction with Mr. Robert O. Morris, he published in 1897 a nominal list of 203 species of wild birds observed in Forest Park, Springfield, Mass., in the Report of the Park Commissioners for that year.

One of the pleasantest episodes of the Seventeenth Congress of the A. O. U. was the receipt of a gift to the Union of $100, from Miss Juliette A. Owen of St. Joseph, Mo., an Associate Member of the Union, which she desired the Council to devote to such use as seemed to it most fitting. While the sum is not large, comparatively speaking, it is most auspicious and encouraging. The subject of raising a fund in aid of ornithological research is one that has been often considered by at least individual members of the A. O. U. Council, and some little effort was at one time made to initiate such a desirable movement. Nothing, how-

ever, resulted from it, and no formal action was ever taken in the matter, until Miss Owen's unsolicited gift gave impetus to this long-cherished scheme. On the receipt of Miss Owen's gift the Council appointed a committee to consider its disposition, resulting in a report recommending that the money he made the nucleus of a fund, the proceeds of which should be devoted to the purpose already stated. In all undertakings it is the first step that counts, hence the hopefulness of the present outlook for the establishment of a fund "for the advancement of the science of ornithology." There is now both reason and ground for an appeal for further contributions toward this end; and it is hoped that this bare statement of the conditions of the case will be sufficient to prompt further and still larger gifts toward the realization of a purpose so desirable.

AN IMPORTANT monograph of 'The Birds of Cheshire,' by T. A. Coward and Charles Oldham is announced for publication early in the spring by Messrs. Sherratt and Hughes, 27 St. Ann Street, Manchester, England. It will be an octavo of upwards of 250 pages, with six plates depicting bird haunts, and a map. The main part of the work will treat of "all the birds known to occur in Cheshire," with an introductory chapter on various special topics relating to the general subject. It is to be published by subscription, at 10*s.* 6*d.* net.

ANOTHER work on British birds, announced as about to appear, is 'The Birds of Glanmorganshire,' by Digby S. W. Nicholl, in demy 8vo, also to be published by subscription, at 7*s.* 6*d.*, or 7*s.* 9*d.* by post. Orders should be sent to Thomas Carter, 8 High Town, Hereford, England.

MR. REGINALD HEBER HOWE, JR., announces that he "proposes to edit, if enough subscribers are secured to insure success, a quarterly ornithological paper," to be called 'Randon Notes on Ornithology,' "to consist of from four to eight pages, composed of general articles and notes." The subscription price is 75 cents, due after the publication of the first issue. Mr. Howe's address is Longwood, Brookline, Mass.

'THE CONDOR' is the new name chosen for 'The Bulletin of the Cooper Ornithological Club,' which enters on its second volume with the beginning of the year 1900. We trust that the good record it has made during the first year betokens for 'The Condor' a long life and permanent prosperity.

THE PROSPECTUS of 'Bird-Lore' for 1900 promises to "set a new standard for popular natural history journals. The articles will be largely by recognized leaders in the world of science and letters, and of a variety which cannot fail to create wide interest." The list of contributors announced seems to make good the claim thus set forth. In connection with the journal the author has established an 'Advisory Coun-

cil' to assist bird students by placing them in "direct communication with an authority on the bird-life of their region who has consented to aid them," the announcement of which Council will be made in the next issue of 'Bird-Lore.'

It is announced that 'The Oölogists Association' proposes to hold its first meeting, probably in Washington, at some yet to be assigned date next fall. The Secretary-Treasurer of the Association is John W. Daniel, Jr., Lynchburg, Va.

The magnitude of the business of destroying birds for millinery purposes has recently been illustrated through the accidental destruction by fire at Wantagh, Long Island, N. Y., Nov. 22, 1899. of a factory for the preparation of the skins and plumage of birds "for the purpose of ornamenting women's hats." This establishment is said to have been the largest of its kind in the United States; it was a one story building, 100 feet long and fifty feet wide, in which about fifty persons were employed in the preparation of birds' plumage for the milliner. At the time of the fire the stock is said to have contained "10,000 stuffed sea gulls, 20,000 wings of various other birds, 10,000 heads of birds, representing many varieties from the beautiful plumaged birds of the South to the plain Long Island Crow. The resources of the establishment had been severely taxed during the past year to provide long wings and single feathers, and a number of special gunners were sent out to provide a supply of those birds that would meet the demand. Long Island baymen all last winter made more money shooting birds for Mr. Wilson than they did at their regular callings of oyster gathering or fishing. The establishment had men stationed at Cape Cod, the islands off the coast of Maine, the shores of Virginia and on the Florida coasts. These men were kept busy filling special orders for certain varieties of birds found in those localities." A few days before the fire "several gunning outfits were sent out from the establishment for the winter's work. One party went out in a big sloop to secure a cargo of water fowl of different sorts, and another party was sent south with a naphtha launch to explore southern rivers for birds, and the Florida coasts will be hunted by still another outfit. Some of these gunners kill a large number of birds in a season. The greatest record made by any one man was 141,000 killed in a single season in Florida."

The owner of this establishment is William L. Wilson, and it is announced that he will at once rebuild his plant. His nefarious work has long been known to our bird protectors, and various attempts have been made to entrap him in the meshes of the law, but through defects in the New York bird law he has always, by the aid of able lawyers, found a loophole for escape. The wide publicity given to his work by the press in describing the destruction of his factory should have the effect to arouse public sentiment against it, and greatly increase the danger

of prosecution to his paid emissaries, particularly in Florida, where, we are informed, the publication of the facts above given have aroused a sentiment that should result in materially checking his work in that State. An effort will also be made to secure a passage of a law by the incoming legislature of New York, which shall render it impossible for such work be carried on with safety in this State.

It is disheartening to bird protectionists to find in the public press statements to the effect that few wild birds are now employed in millinery decorations, which are, it is claimed, made up principally from the plumage of domesticated fowls and game birds killed as food. Even the aigrettes are said to be obtained without killing the birds, the plumes being either picked up from the ground after the birds have shed them, or obtained from egret-farms, just as ostrich plumes are obtained by ostrich farming. It is pretty safe to assume, though hard to prove, that such statements as these emanate from an interested source, and are put forth to dull the sense of the public to the real facts in the case. The 'general public' is unable to discriminate in matters of ornithology, and to a large extent believes what it is intended it should believe by the interested authors of such misinformation. A survey of women's headgear, as the average woman appears in public, is a painful sight to the ornithologist, who at a glance can tell the source of these hat decorations, however mutilated and disguised, with reasonable certainty, and can realize to what an enormous extent our wild birds are still sacrificed for woman's defacement. Not only are Hawks and Owls, Terns and Gulls, Grebes and Herons, and other birds in nameless variety, but even the Brown Pelican and Turkey Buzzard are made to contribute to the barbaric display.

But worst of all is the fact that high-toned and respectable fashion journals will publish statements like that given below and fail not only to retract them when shown their erroneous and harmful character. As an example we call attention to the following: "The tender-hearted women who have refused to wear egrets on their hats and bonnets, on account of the poor mother-birds, will be glad to learn that they are not killed for the purpose of obtaining these lovely ornaments. As a matter of fact, the hunters, without powder or shot, go around (in South America or India) during the right season to the breeding or roosting grounds and collect the plumes which are cast by the male every year.

"In Venezuela the natives are beginning to farm the birds, as they are easily domesticated; and as the egrets grow again each year, the enterprise should be very profitable.

"It has long been considered a very cruel thing to wear an egret, as it was supposed that a mother-bird was killed to obtain it. We have heard harrowing descriptions of nests of young birds left unprotected while the mother-birds lay mangled on the ground — all for the adornment of heathen woman-kind. But now the most tender-hearted lady (provided

she can afford the luxury) may wear this beautiful ornament with a clear conscience."

The above is from the editorial page of 'Harper's Bazar,' of Nov. 18, 1899. It was presumed that it was put forth innocently and in ignorance of the facts, and that a respectful and courteous presentation of the truth in the matter would be not only welcomed, but would lead to a proper retraction of the erroneous statements. Not only has this not been the case, but the courtesy of even an acknowledgment of such communications, sent as private letters and not for publication, has not been vouchsafed. The inference is that no great compunction of conscience was felt on the part of the management of this leading fashion journal for a most inhumane misstatement of facts in the matter of how egret plumes are obtained for millinery use. The various reports of egret farms, located in such improbable places as Arizona, New Mexico, Venezuela, etc., have in each case proved upon investigation to be wholly mythical, as any ornithologist would expect; and, as ornithologists also know, the reported gathering of shed egret plumes as a source of millinery supply, must, in the nature of things, be equally imaginary.

Apropos of the above related incidents Mr. Witmer Stone, Chairman of the A. O. U. Committee on the Protection of North American birds, has prepared a two-page circular devoted to a brief summary of the facts in relation to how aigrettes are really obtained. A large edition of this circular has been issued for general distribution by the Pennsylvania Audubon Society. This is a prompt and praiseworthy effort to offset the harm that must necessarily result from such cruel misstatements, sent broadcast throughout the world, as that above quoted from 'Harper's Bazar.'

The matter has also been taken up by Mr. Chapman in the New York 'Tribune' of Dec. 28, 1899, from which it appears that the 'Harper's Bazar' editorial was based on 'hearsay evidence,' which was allowed credence in the face of the facts so well known to be entirely adverse to such allegations.

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BUREAU, Dr. LOUIS, École de Médicine, Nantes, France.....1884
BUTLER, Lieut.-Col. E. A., Brettenham Park, Bildeston, Suffolk, England.....1884
BÜTTIKOFER, Dr. J., Zoölogical Gardens, Rotterdam, Holland.....1886
CLARKE, WM. EAGLE, Science and Art Museum, Edinburgh.....1889
COLLETT, Prof. ROBERT, Zoölogical Museum, Christiania, Norway.1883
COOPER, Dr. J. G., Haywards, California.....1884
DALGLEISH, JOHN J., Brankston Grange, Bogside Station, Stirling, Scotland.....1883
DAVID, L'Abbé ARMAND, Rue de Sèvres, 95, Paris.....1883
DOLE, SANFORD B., Honolulu, Hawaiian Ids.....1888
DUBOIS, Dr. ALPHONSE, Museum Nat. History, Brussels.....1884
DUGÈS, Prof. ALFREDO, Colegio del Estado, Guanajuato, Mexico....1884
ECHT, ADOLPH BACHOFEN VON, Nussdorf, near Vienna.....1883
EVANS, ARTHUR H., 9 Harvey Road, Cambridge, Eng.....1899
FATIO, Dr. VICTOR, Geneva, Switzerland.....1884
FEILDEN, Lieut.-Col. H. W., West House, Wells, Norfolk, Eng.....1884
FERRARI-PEREZ, Prof. FERNANDO, Naturalist Mexican Geol. Expl. Commission, Pueblo, Mexico.....1885
FREKE, PERCY EVANS, Step House, Borris, Co. Carlow, Ireland.....1883
FÜRBRINGER, Dr. MAX, Jena, Germany.....1891
GADOW, Dr. HANS, Zoölogical Museum, Cambridge, England.....1884
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GODMAN, F. DU CANE, 10 Chandos Street, Cavendish Sq., London..1883
GODWIN-AUSTEN, Lieut-Col. H. H., Shalford House, Guilford, England.....1884
GRANDIDIER, ALFRED, 6 Rond-Point des Champs Elysées, Paris.....1883
GRANT, WILLIAM R. OGILVIE, 26 Hereford Square, London, S. W....1899
GURNEY, JOHN HENRY, Keswick Hall, Norwich, England.....1883

HARTERT, ERNST, Zoölogical Museum, Tring, England.....1891
HARTING, JAMES EDMUND, Linnæan Society, Burlington House, Piccadilly, London.....1883
HARVIE-BROWN, JOHN A., Dunipace House, Larbert, Stirlingshire, Scotland.....1883
HAYEK, Dr. GUSTAV VON, Vienna.....1884
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KRÜPER, Dr. THEOBALD J., University Museum, Athens, Greece....1884
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LEVERKÜHN, PAUL, Sophia, Bulgaria.....1890
MACFARLANE, ROBERT, Winnipeg, Manitoba.....1886
MADARÁSZ, Dr. JULIUS VON, National Museum, Budapest, Hungary. 1884
MENZBIER, Dr. M., Imperial Society of Naturalists, Moscow.....1884
MEYER, Dr. A. B., Director of the Royal Zool. Museum, Dresden....1884
NAMIYE, M., Tokio.....1886
NICHOLSON, FRANCIS, 84 Major St., Manchester, England 1884
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OUSTALET, Dr. EMILE, Jardin des Plantes, 55 Rue de Buffon, Paris.1888
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BISHOP, Dr. LOUIS B., 77 Whitney Ave., New Haven, Conn.....1885
BLACKWELDER, ELIOT, Morgan Park, Cook Co., Ill.....1895
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BOARDMAN, GEORGE A., Calais, Maine.....1883
BOND, FRANK, 822 E. 19th St., Cheyenne, Wyoming..... 1887
BOND, HARRY L., Meriden, Iowa.....1890
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CLARK, JOSIAH H., 238 Broadway, Paterson, N. J.....1895
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COPELAND, Dr. ERNEST, 141 Goldsmith Bldg., Milwaukee, Wis.....1897
COUES, Dr. WILLIAM PEARCE, 90 Charles St., Boston, Mass.....1888
COURT, EDWARD J., 3303 17th St., N. W., Washington, D. C.....1899
COX, ULYSSES O., State Normal School, Mankato, Minn.....1894
CRAM, R. J., 26 Hancock Ave., W., Detroit, Mich.....1893
CRANDALL, C. W., Woodside, Queen's Co., N. Y.....1891
CRANDALL, SILAS W., Winnetka, Ill.....1899
CRAWFORD, JOHN, Lakefield, Minn.....1899
CROLIUS, Miss ANNE A., 53 W. 53d St., New York City 1897
CURRIE, ROLLA P., Dept. Insects, U. S. Nat. Mus., Washington, D. C.1895
CURRIER, EDMONDE SAMUEL, 909 Franklin St., Keokuk, Iowa.....1894
DAENZER, CARL, 1730 Missouri Ave., St. Louis, Mo.....1888
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DAVIS, Miss MARY A., Studio 9, 52 E. 23d St., New York City.....1898
DAVIS, MINOT, Swan River Logging Co., Swan River, Minn.....1896
DAWSON, WILLIAM LEON, Ahtanum, Washington.....1895
DAY, CHESTER SESSIONS, 280 Newbury St., Boston, Mass.....1897
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DICKINSON, W. S., Miami, Dade Co., Fla.....1891
DILLE, FREDERIC M., 406 McPhee Bldg., Denver, Colo.....1892
DIONNE, C. E., Laval Univ., Quebec, Can. 1893

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EMERY, Mrs. ANNIE C., Ellsworth, Me.....1897
EMLEN, ARTHUR COPE, Awbury, Germantown, Philadelphia, Pa...1896
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EVANS, WILLIAM B. Box 129, Moorestown, N. J.....1897
EVERMAN, Prof. BARTON W., U. S. Fish Comm., Washington, D. C. 1883
FANNIN, JOHN, Provincial Museum, Victoria, B. C.....1888
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HOFFMAN, RALPH, Belmont, Mass.....1893
HOLDEN, EDWARD FREEMAN, 32 Lake Av., Melrose, Mass.....1896
HOLLAND, Dr. WILLIAM J., 5th and Bellefield Avs., Pittsburgh, Pa...1899
HOLLENBERG, Mrs. AMELIA ADELAIDE, Little Rock, Ark.....1898
HOLLISTER, NED, Delavan, Wis.....1894
HOLSTEIN, OTTO, Jackson, Ky.....1898
HOOPES, JOSIAH, West Chester, Pa.....1889
HOOVER, THEODORE JESSE, Stanford Univ., Cala.....1898
HORNADAY, W. T., Zoölogical Park, New York City.....1888
HORNBROOKE, Mrs. ORINDA DUDLEY, 68 Lombard St., Newton, Mass.....1897
HOWARD, OZORA WILLIAM, Fort Huachuca, Ariz.....1898
HOWE, CLARENCE P., 206 Racine Av., Waukesha, Wis.....1891
HOWE, REGINALD HEBER, Jr., Longwood, Mass.....1895
HOWELL, ARTHUR H., Dept. of Agriculture, Washington, D. C.....1889
HUBBARD, Miss MARGARET TUESDALE, Minneapolis, Minn.....1899
HUBBARD, Mrs. SARA A., 39 33rd St., Chicago, Ill.....1891
HUGHES, Dr. WILLIAM E., 3945 Chestnut St., Philadelphia, Pa.....1891
HULL, WALTER B., Box 1234, Milwaukee, Wis.....1889
HUNN, JOHN T. SHARPLESS, 1218 Prospect Av., Plainfield, N. J.....1895
HUNTER, Miss SUSAN MORRISON, 51 De Blois Av., Newport, R. I....1894
HUNTER, W. D., Univ. of Nebraska, Lincoln, Neb.....1899
INGALLS, CHARLES E., East Templeton, Mass.....1885
INGERSOLL, ALBERT M., 818 5th St., San Diego, Cala.....1885
INGRAHAM, D. P., Beulah, Colo.....1889
IRVING, JOHN, 550 Park Ave., New York City.....1894
ISHAM, C. B., 30 E. 63d St., New York City.....1891
JACKSON, THOMAS H., 343 E. Biddle St., West Chester, Pa.....1888
JACOBS, J. WARREN, Waynesburg, Pa.....1889
JANNEY, NATHANIEL E., Broad and Chestnut Sts., Phila., Pa.....1899

JEFFRIES, WILLIAM AUGUSTUS, 78 Devonshire St., Boston, Mass.....1883
JESURUN, Dr. MORTIMER, Douglas, Wyoming.....1890
JOB, Rev. HERBERT K., Kent, Connecticut.....1896
JOHNSON, ALFRED WILLIAM, Waterside, Marple, Cheshire, England.1893
JOHNSON, EVERETT EDWIN, Lewiston, Me.....1896
JOHNSON, FRANK EDGAR, 747 Warburton Av., Yonkers, N. Y.....1888
JOHNSON, JAMES HOWARD, Peterboro, N. H.....1894
JOHNSON, WALTER ADAMS, 137 W. 103d St., New York City.....1895
JOHNSON, WILLIAM S., Boonville, N. Y.....1893
JONES, LYNDS, College Museum, Oberlin, Ohio.....1888
JONES, Prof. MARCUS E., Salt Lake City, Utah.....1890
JORDAN, A. H. B., Lowell, Wash.....1888
JORDAN, Prof. DAVID STARR, Stanford University, Cala.....1888
JUDD, ELMER T., Cando, No. Dak.....1895
JUDD, SYLVESTER D., Georgetown Univ., Washington, D. C.....1893
KAEDING, HENRY BARROILHET, 1201 Laguna St., San Francisco, Cal.1897
KEAY, FRED. ERBURN, 19 Davenport St., North Cambridge, Mass...1898
KEAYS, JAMES EDWARD, 859 Wellington St., London, Ont.....1899
KELKER, WILLIAM A., Box 114, Harrisburg, Pa.....1896
KELLOGG, VERNON L., Stanford University, Cala.....1888
KENDALL, Dr. WILLIAM C., U. S. Fish Comm., Washington, D. C..1886
KENNARD, FREDERIC HEDGE, Brookline, Mass.....1892
KEYSER, Rev. LEANDER S., 723 So. 5th Av., Atchison, Kan..... 1891
KING, GEORGE GORDON, Newport, R. I.....1888
KIRKWOOD, FRANK C., P. O. Box 364, Baltimore, Md.....1892
KITE, NATHAN, 723 N. 44th St., Philadelphia, Pa.....1899
KNETSCH, ROBERT, Terra Cotta. Ills.....1898
KNIGHT, ORA WILLIS, 32 Coombs St., Bangor, Me.....1893
KNOLHOFF, FERDINAND WILLIAM, 28 Winans St., East Orange, N. J.1897
KNOWLTON, F. H., U. S. Nat. Mus., Washington, D. C.....1883
KNOX, JOHN C., 18 State St., Auburn, N. Y.....1897
KNOX, JOHN COWING, University P. O., Minneapolis, Minn.....1899
KOBBÉ, WILLIAM H., Fort Mason, San Francisco, Cala.....1898
KOCH, Prof. AUGUST, Williamsport, Pa.....1891
KOCH, FREDERIC W., Merced, Cala.....1891
KOHN, GUSTAVE, 14 Carondelet St., New Orleans, La.....1886
KOPMAN, HENRY HAZLITT, Covington, La.....1899
KOUMLY, Rev. PIRMINE M., St. Benedict's College, Atchison, Kansas.1892
KUMLIEN, LUDWIG, Milton, Wis.....1895
LACEY, HOWARD GEORGE, Kerrville, Texas.....1899
LADD, SAMUEL B., West Chester, Pa.....1889
LAHEE, EUGENE H., Covina, Cala.....1893
LAMBERTON, ALEXANDER BYRON, 303 East Av., Rochester, N. Y...1899
LANO, ALBERT, Aitkin, Minn.....1890
LANTZ, Prof. DAVID ERNEST, Chapman, Kans.....1885
LATIMER, Miss CAROLINE P., 63 Remsen St., Brooklyn, N. Y. 1898
LAWRENCE, HIRAM V., 132 Bedford Ave., Brooklyn, N. Y.....1895

LAWRENCE, ROBERT B., 69 Franklin Place, Flushing, N. Y..... 1883
LEE, Miss MARY, 5131 Morris St., Germantown, Pa.....1898
LEMMON, WILLIAM P., Englewood, N. J.....1896
LEUTLOFF, HERMAN C. A., 229 W. 135th St., New York City.....1896
LEVERING, THOMAS HENRY, 1435 Chapin St., Washington, D. C....1898
LINK, GUSTAV A., 50 Boggs Av., Pittsburgh, Pa.....1899
LONG, HORACE B., 14 Anna St., Worcester, Mass.....1889
LOOMIS, Miss EDNA, Jackson, Mich.....1897
LOOMIS, JOHN A., Paint Rock, Concho Co., Texas.....1887
LORING, J. ALDEN, Zoological Park, New York City.....1889
LOWBER, Miss EMMA WORRELL, 2045 Locust St., Philadelphia, Pa...1898
LOWE, WILLOUGHBY P., Ardenlee, Llewelyn Road, Cdwyn Bay, No. Wales.....1893
LUM, GEORGE RENWICK, 18 North St., Stamford, Conn.....1897
LUSK, RICHARD D., Rosemont, Ariz.....1894
MACDOUGALL, GEORGE R., 112 Wall St., New York City.....1890
MACKAY, GEORGE H., Nantucket, Mass.....1890
MADDOCK, Miss EMELINE, The Rittenhouse, Philadelphia, Pa.....1897
MAGUIRE, Dr. J. R., Lewistown, Ill.....1896
MAILLIARD, JOHN W., 307 Sansome St., San Francisco, Cala.....1895
MAILLIARD, JOSEPH, San Geronimo, Cala.....1895
MAIRES, Dr. WALTER W., 939 N. 12th St., Philadelphia, Pa.....1899
MAITLAND, ROBERT L., 170 Broadway, New York City.....1889
MALI, CHARLES M., 8 Fifth Av., New York City.....1889
MARBLE, CHARLES C., 6126 Ingleside Av., Chicago, Ill.....1897
MARSH, DANIEL J., Springfield, Mass.....1894
MARTIN, JOHN WILLIAM, Palestine, Ore.....1898
MASON, HOWARD HARRIS, Box 287, Riverpoint, R. I.....1897
MASTERMAN, ELMER ELLSWORTH, New London, Ohio.....1895
MATHEWS, Miss CAROLINE, Waterville, Me.....1898
MAULE, WILLIAM MARIS, Swathmore College, Pa.....1897
MAYNARD, COLTON, 1407 15th St., N. W., Washington, D. C.....1895
MCCADDEN, DAVID, 3959 Parrish St., Philadelphia, Pa.....1898
MCCOOK, PHILIP JAMES, Niantic, Conn.....1895
MCCORMICK, LOUIS M., Glen Island, N. Y.....1892
MCGREGOR, RICHARD C., Box 211, Palo Alto, Cala.....1889
MCHATTON, Dr. HENRY, 335 College St., Macon, Ga.....1898
MCILHENNY, EDWARD AVERY, Avery's Island, La.....1894
MCKENZIE, PETER, 4492 St. Catharine St., Montreal, Can.....1896
MCKINLAY, JAMES, Pictou, Nova Scotia.....1898
MCLAIN, ROBERT BAIRD, Cor. Market and 12th Sts., Wheeling, W. Va.....1893
MEAD, GEORGE S., 3300 Washington St., San Francisco, Cala.....1898
MEARNS, LOUIS DI ZEREGA, Fort Adams, Newport, R. I.....1899
MEEKER, JESSE C. A., 166 Hough Av., Bridgeport, Conn.....1899
MERRILL, HARRY, Bangor, Maine.....1883
MILLER, GERRIT SMITH, Jr., Peterboro', N. Y.....1886

MILLER, JAMES HENRY, Lowville, N. Y.....1894
MILLER, Miss MARY MANN, 827 De Kalb Ave., Brooklyn, N. Y.....1898
MILLER, Mrs. OLIVE THORNE, 827 De Kalb Ave., Brooklyn, N. Y...1887
MILLER, WALDRON DE WITT, Plainfield, N. J.....1896
MILLS, HARRY C., Unionville, Conn.....1897
MITCHELL, Mrs. MINA BAKER, Chattanooga, Tenn.....1898
MITCHELL, WALTON I., 534 Summit Av., St. Paul, Minn.....1893
MONTGOMERY, THOMAS H., Jr., Univ. Pennsylvania, Phila., Pa.....1899
MOON, JOACHIM RICHARD, 934 Broadway, Camden, N. J.....1898
MOORE, ROBERT THOMAS, Haddonfield, N. J.....1898
MORCOM, G. FREAN, 125 Commonwealth St., Los Angeles, Cala....1886
MORISON, GEORGE ABBOT, 17 Farrar St., Cambridge, Mass.....1896
MORRELL, CLARENCE HENRY, Pittsfield, Me.....1897
MORRIS, GEORGE SPENCER, Olney, Philadelphia, Pa.....1887
MORRIS, ROBERT O., Springfield, Mass.....1888
MORRISON, GEORGE A., Fox Lake, Wis.....1891
MORSE, GEORGE W., 8612 Morgan St., Chicago, Ill.....1898
MOSHER, FRANK H., 283 Pleasant St , Malden, Mass.....1898
MULLIKEN, WILLARD EARLE, Grand Rapids, Mich.....1898
MURDOCK, JOHN, 195 Walnut Av., Roxbury, Mass.....1883
MYERS, Miss LUCY F., "Brookside," Poughkeepsie, N. Y.....1898
NASH, HERMAN W., Box 264, Pueblo, Colorado.....1892
NELSON, JAMES ALLEN, 248 S. 39th St., Philadelphia, Pa.....1898
NEWBURY, FREDERICK EARL, 82 Westminster St., Providence, R. I...1897
NEWMAN, STEPHEN M., D. D., 1818 M. St., N. W., Washington, D. C.....1898
NICHOLS, JOHN M., Box 45, Peabody, Mass.....1890
NICHOLSON, AUGUSTUS MILTON, Box 447, Orlando, Fla.....1898
NORRIS, Rev. JAMES AVERY, Glen Cove, N. Y.....1894
NORRIS, J PARKER, 723 Walnut St., Philadelphia, Pa.....1886
NORTON, ARTHUR H., Westbrook, Maine.....1890
NORTON, ARTHUR HENRY WHITELEY, Box 918, San Antonio, Texas.....1894
NORTON, RICHARD, 'Shady Hill,' Cambridge, Mass.....1888
NOWELL, JOHN ROWLAND, Portman, S. C.....1897
OBERHOLSER, HARRY C., 1505 Howard Av., Mt. Pleasant, Washington, D. C.....1888
O'CONNOR, HALDEMAN, 25 No. Front St., Harrisburg, Pa.....1896
OGDEN, Dr. HENRY VINING, 141 Wisconsin St., Milwaukee, Wis.....1897
OLDS, HENRY WORTHINGTON, 302 New Jersey Av., Washington, D. C.....1896
O'NEIL, EDWARD, Sewickley, Allegheny Co., Pa.....1893
ORTH, GEORGE S., Bridgeville, Pa.....1892
OSBORN, CHASE SALMON, Sault Ste. Marie, Mich.....1893
OSBURN, RAYMOND CARROLL, Fargo College, Fargo, N. D.....1899
OSBURN, Rev. WILLIAM, 107 University St., Nashville, Tenn.....1890
OSGOOD, FLETCHER, 7 Marlboro St., Chelsea, Mass.....1897

OSGOOD, WILFRED HUDSON, Dept. of Agriculture, Washington, D. C..1893
OWEN, CHARLES C., 340 Williams St., East Orange, N. J.... 1896
OWEN, Miss JULIETTE AMELIA, 306 No. 9th St., St. Joseph, Mo.....1897
PADDOCK, Miss ISABEL MONTEITH, Museum, St. Johnsbury, Vt....1899
PAGE, Mrs. ALICE WILSON, Hotel Margaret, Brooklyn, N. Y.....1896
PAINE, AUGUSTUS G., Jr., 311 W. 74th St., New York City.....1886
PALMER, Dr. THEODORE S., Dept. of Agriculture, Washington, D. C..1888
PALMER, SAMUEL COPELAND, Swarthmore, Pa.....1899
PAPE, CHARLES WESLEY, Manhattan, Kansas.....1896
PARKER, J. GRAFTON, Jr., 100 Washington St., Chicago, Ill.....1894
PARKER, WENDELL PHILIPPS, 2 Midland St., Worcester, Mass.....1897
PAYNE, CHARLES, Box 913, Wichita, Kan.....1898
PAYNE, E. B., Catlin, Ill.....1896
PEABODY, Rev. P. B., Hallock, Minn..... 1891
PEABODY, WILLIAM RODMAN, 13 Kirkland St., Cambridge, Mass....1890
PEARSON, T. GILBERT, Guilford College, N. C.....1891
PENNOCK, CHARLES J., Kennett Square, Chester Co., Pa.....1888
PERKINS, CHARLES E., Box 854, Hartford, Conn.....1888
PERRIOR, ALBERT WILLIAM, 316 E. Kennedy St., Syracuse, N. Y....1897
PETERSON, J. P., West Denmark, Polk Co., Wis.....1885
PHELPS, Mrs. ANNA BARDWELL, Box 36, Northfield, Mass.....1899
PHILIP, HOFFMAN, Metropolitan Club, Washington, D. C.....1897
PHILLIPS, A. H., Princeton, N. J.....1891
PIERCE, A. K., Renovo, Pa.....1891
PIERS, HARRY, 'Stanyan,' North West Arm, Halifax, N. S.....1891
POE, Miss MARGARETTA, 1500 Park Av., Baltimore, Md.....1899
POMEROY, FRED ELMER, 164 Holland St., Lewiston, Me..... 1899
POMEROY, HARRY KIRKLAND, P. O. Box 575, Kalamazoo, Mich.....1894
POPENOE, Prof. EDWIN A., Topeka, Kan.....1886
PORTER, LOUIS H., Hotel San Remo, New York City.....1893
POTTER, RAYMOND B., Box 491, Nyack, N. Y.....1895
POWERS, WILLIAM LINCOLN, Gardiner, Maine.....1895
PRAEGER, WILLIAM E., University of Illinois, Urbana, Ill.....1892
PRATT, Rev. GEORGE B., 61 Laflin St., Chicago, Ill.....1895
PREBLE, EDWARD A., Dept. of Agriculture, Washington, D. C.....1892
PRENTISS, D. WEBSTER, Jr., 1218 9th St., N. W., Washington, D. C.1890
PRICE, WILLIAM THOMPSON, Glen Cove, N. Y.....1898
PRICE, WILLIAM W., The Thacher School, Nordhoff, Cala.....1893
PURDY, JAMES B., Plymouth, Mich.....1893
RALPH, Dr. WILLIAM L., 26 Court St., Utica, N. Y.....1888
RANN, Mrs. MARY L., Manchester, Iowa.....1893
RATHBUN, FRANK R., 42½ Franklin St., Auburn, N. Y.....1883
RAWSON, CALVIN LUTHER, Box 33, Norwich, Conn.....1885
READ, ALBERT M., 1140 15th St., N. W., Washington, D. C.....1895
REAGH, ARTHUR LINCOLN, 39 Maple St., West Roxbury, Mass.....1896
REDFIELD, Miss ELISA WHITNEY, 107 No. 34th St., Philadelphia, Pa.1897
REDINGTON, ALFRED POKTT, 1901 Santa Barbara St., Santa Barbara, Cala.....1890

REED, J. HARRIS, 2030 No. Gratz St., Philadelphia, Pa.....1890
REED, HOWARD S., 1320 Gaylord St., Denver, Colo.....1894
RHOADS, CHARLES J., Bryn Mawr, Pa.....1895
RHOADS, SAMUEL N., Audubon, Camden, Co., N. J.....1885
RICHARDSON, JOHN KENDALL, Wellesley Hills, Mass.....1896
RICKER, EVERETT WILDER, 16 Alveston St., Jamaica Plains, Mass..1894
RIDGWAY, JOHN L., U. S. Geol. Surv., Washington. D. C.....1890
RIKER, CLARENCE B., Maplewood, N. J.....1885
RILEY, JOSEPH H., Falls Church, Va.....1897
RIVES, Dr. WILLIAM C., 1723 I St., Washington, D. C.....1885
ROBINS, Mrs. JULIA STOCKTON, 114 S. 21st St., Philadelphia, Pa....1895
ROBERTS, Miss ETHEL DANE, 78 Pittsburg Av., Wooster, Ohio.....1899
ROBERTS, GEORGE W., Box 66, West Chester, Pa.....1891
ROBINSON, Lieut. WIRT, U. S. A., Hubbard Park, Cambridge, Mass.1897
ROCKWELL, ROBERT BLANCHARD, 3034 W. 24th Ave., Denver, Colo..1898
RODDY, Prof. H. JUSTIN, State Normal School, Millersville, Pa.....1891
ROOD, Mrs. E. IRENE, 706 Colorado St., Austin, Texas 1893
ROOSEVELT, FRANKLIN DELANO, Hyde Park, N. Y.....1896
ROOSEVELT, Hon. THEODORE, Oyster Bay, Queens Co., N. Y.....1888
ROTZELL, Dr. W. E., Narberth, Pa.....1893
ROWLAND, Mrs. ALICE STORY, 511 W. 7th St., Plainfield, N. J.....1897
ROWLEY, JOHN, Jr., Am. Mus. Nat. Hist., New York City.....1889
RUSSEL, HOWLAND, 106 Mason St., Milwaukee, Wis.....1899
RUSSELL, WATERMAN S. C., Bennington, Vt.....1896
SAGE, HENRY M., Albany, N. Y.....1885
SAMPSON, WALTER BEHRNARD, 921 No. Monroe St., Stockton, Cala.1897
SANFORD, FRANK ELWOOD, Supt. Public Schools, La Grange, Ill...1897
SANFORD, GEORGE ALDEN, 316 W. 82d St., New York City.....1898
SAVAGE, DAVID LEWIS, Salem, Iowa.....1894
SAVAGE, JAMES, 134 Abbott St., Buffalo, N. Y.....1895
SAVAGE, WALTER GILES, Box 77, Hillsboro, Henry Co., Iowa.....1898
SCHALER, JOHN, Stamford, Conn.....1893
SCHOENEBECK, AUGUST JOHN, Kelley Brook, Wis.....1898
SCHRAGE, E. B., Pontiac, Mich.....1895
SCHURR, Prof. THEODORE A., 14 Lake St., Pittsfield, Mass.....1888
SCHWAB, Rev. LAWRENCE H., 549 W. 156th St., New York City.....1892
SCUDDER, BRADFORD A., Public Library, Taunton, Mass.....1893
SEISS, COVINGTON FEW, 1338 Spring Garden St., Philadelphia, Pa...1898
SELOUS, PERCY SHERBORN, Box 1133, Greenville, Mich.....1898
SHATTUCK, EDWIN HAROLD, Granby, Conn.....1898
SHATTUCK, GEORGE CHEEVER, 135 Marlboro St., Boston, Mass.....1896
SHAW, HOLTON A., Grand Forks, No. Dakota.. 1898
SHELDON, CHARLES, Apartado 46, Chihuahua, Mexico.....1898
SHEPARD, MARSHALL, 280 Amsterdam Av., New York City.....1899
SHEPPARD, EDWIN, Acad. Nat. Sci., Philadelphia, Pa.....1892
SHERRILL, W. E., Haskell, Texas.....1896
SHIELDS, ALEXANDER M., Crocker Bldg., San Francisco, Cala.....1896

SHIELDS, GEORGE O., 19 W. 24th St., New York City.....1897
SHOEMAKER, FRANK H., Omaha, Neb.....1895
SHROSBREE, GEORGE, Public Mus., Milwaukee, Wis.....1899
SHRYOCK, WILLIAM A., 21 N. 7th St., Philadelphia, Pa.....1893
SILLOWAY, PERLEY MILTON, Rood House, Ill.....1896
SMITH, CHARLES PIPER, 191 W. 8th St., Anderson, Ind.....1898
SMITH, HORACE G., 2918 Lafayette St., Denver, Colo.....1888
SMITH, Dr. HUGH M., 1248 New Jersey Ave., Washington, D. C.....1886
SMITH ROBERT WINDSOR, Kirkwood, Ga.....1895
SMITH, THEODORE H., 22 Essex Av., Orange, N. J.....1896
SMITH, S. SIDNEY, 59 Wall St., New York City.....1888
SMYTH, Prof. ELLISON A., Jr., Agr. and Mech. Coll., Blacksburg, Va..1892
SNIVELY, Miss ANNA M., 4746 Madison Av., Chicago, Ill.....1898
SNYDER, WILL EDWIN, Beaver Dam, Wis.....1895
SORNBORGER, JEWELL D., Cambridge, Mass.....1888
SOUTHARD, ROBERT HAMILTON, Cap & Gown Club, Princeton, N. J.1898
SOUTHWICK, E. B., Arsenal Bldg., Central Park, New York City....1888
SOUTHWICK, JAMES M., Mus. Nat. Hist., Providence, R. I.....1896
SPAULDING, FRED. B., Lancaster, N. H.....1894
SPRAGUE, WILLIAM ARNOLD, 182 Laurel Hill Av., Olneyville, R. I..1898
STANTON, Prof. J. Y., Bates College, Lewiston, Me.....1883
STEELE, Dr. MINOT A., Portsmouth, R. I.....1898
STEINMETZ, FRANK JACOB, Carson City, Nev.....1899
STEPHENS, FRANK, 642 Irving Av., San Diego, Cala.....1883
STEPHENSON, Mrs. LOUISE McGOWN, Helena, Ark.....1894
STONE, CLARENCE FREEDOM, Branchport, N. Y.....1894
STONE, CLAYTON ELBERT, Lunenburg, Mass.....1899
STONE, DWIGHT D., Lansing, N. Y.....1891
STRONG, REUBEN M., 11 Mellen St., Cambridge, Mass.....1889
STUDER, JACOB HENRY, 114 Fifth Ave., New York City.....1888
STURTEVANT, EDWARD, St. George School, Newport, R. I.....1896
SUTTON, GEORGE BYRON, Newark Valley, N. Y.....1896
SWAIN, JOHN MERTON, 319 Commercial St., Portland, Me.....1899
SWINBURNE, JOHN, Carlton Lodge Castel, Guernsey, England.....1887
TABOR, ERNEST G., Meridian, N. Y.....1898
TALLEY, Prof. THOMAS WASHINGTON, Box 523, Tallahassee, Fla....1896
TATUM, JOSEPH WILLIAM, 843 No. 41st St., Philadelphia, Pa.....1897
TAYLOR, ALEXANDER O'DRISCOLL, 124 Bellevue Ave., Newport, R. I. 1888
TEST, Dr. FREDERICK CLEVELAND, 4401 Indiana Ave., Chicago, Ill..1892
THAYER, ABBOTT H., Scarborough, N. Y.....1896
THAYER, JOHN ELIOT, Lancaster, Mass.....1898
THOMAS, HOWARD WELLS, 133 W. 63d St., New York City.....1898
THOMPSON, ERNEST SETON, 144 5th Av., New York City.....1883
THOMSON, Prof. GEORGE S., Iknownot, Colo.....1892
TODD, LOUIS M., Calais, Me.....1887
TODD, W. E. CLYDE, Beaver, Pa.....1890
TOPPAN, GEORGE L., 321 Main St., Racine, Wis.....1886

TORREY, BRADFORD, Wellesley Hills, Mass.....1883
TOWNSEND, CHARLES H., U. S. Fish Comm., Washington, D. C.....1883
TOWNSEND, WILMOT, 3d Av. and 75th St., Bay Ridge, N. Y.....1894
TREAT, WILLARD E., Silver Lane, Conn.....1885
TROMBLEY, JEROME, Box 54, Petersburg, Mich.....1885
TROSTLER, ISADOR SIMON, 4246 Farnam St., Omaha, Neb.....1897
TROTTER, Dr. SPENCER, Swarthmore College, Swarthmore, Pa.....1888
TROTTER, WILLIAM HENRY, 36 No. Front St., Philadelphia, Pa.....1899
TROY, Miss GERTRUDE ESTELLA, 578 E. 60th St., Chicago, Ills.....1899
TUTTLE, Dr. CARL, Berlin Heights, Ohio.....1890
UPHAM, Mrs. MARY C., Marshfield, Wis.....1897
UTTER, HERBERT LAMB, 792 Hancock St., Brooklyn, N. Y.....1898
VAN CORTLANDT, Miss ANNE S., Croton-on-Hudson, N. Y.....1885
VAN DENBURG, Dr. JOHN, Los Gatos, Cala.....1893
VAN NORDEN, WARNER MONTAGNIE, 25 Nassau St., New York City.1899
VAN SANT, Miss ELIZABETH, City Hall, Omaha, Neb.....1896
VELIE, Dr. J. W., Box 2072, St. Joseph, Mich.....1886
VETTER, Dr. CHARLES, Jr., 152 Second St., New York City.....1898
VILARO, Dr. JUAN, Havana, Cuba.....1888
VOELKER, CHARLES A., Adamsford, Del. Co., Pa.....1897
WALCOTT, ROBERT, 11 Waterhouse St., Cambridge, Mass.....1893
WALES, EDWARD H., Hyde Park, N. Y.....1896
WALKER, Dr. R. L., 94 Main St., Carnegie, Pa.....1888
WARREN, Dr. B. H., Box 2027, West Chester, Pa.....1885
WATERMAN, WILLIAM, Bigelow, Minn.....1896
WATERS, EDWARD STANLEY, Holyoke, Mass.....1894
WATKINS, L. WHITNEY, Manchester, Mich.....1894
WEBSTER, Mrs. ELLEN EMELINE, Franklin Falls, N. H.....1898
WEIR, J. ALDEN, 11 E. 12th St., New York City.....1899
WEST. LEWIS H., Roslyn, Nassau Co., N. Y.....1887
WHEELER, EDMUND JACOB, 95 Jefferson Av., New London, Conn...1898
WHEELER, Rev. HARRY EDGAR, Huntsville, Ala.....1897
WHEELER, JOHN B., East Templeton, Mass.....1897
WHITAKER, WILLIAM LINCOLN, Cedar Grove, Philadelphia, Pa.....1894
WHITE, FRANCIS BEACH, 6 Phillips Place, Cambridge, Mass.....1891
WHITCOMB, Mrs. ANNABELL COOK, 721 Franklin St., Milwaukee, Wis.....1897
WHITMAN, Prof. CHARLES OTIS, Univ. of Chi., Chicago, Ills.....1896
WHOLEY, WM. N., West Berkeley, Cal.....1891
WICKS, M. L., Jr., Hellman Block, Los Angeles, Cala.....1890
WILBUR, ADDISON P., 12 Gibson St., Canandaigua, N. Y.....1895
WILCOX, T. FERDINAND, 7 Upper Pine, Princeton, N. J.....1895
WILDE, MARK L. C., Box 36, Merchantville, N. J.....1893
WILLARD, FRANK COTTLE, Tombstone, Ariz.....1898
WILLIAMS, J. BICKERTON, 32 University St., Montreal, Can.....1889
WILLIAMS, ROBERT STATHAM, Botanical Garden, New York City..1888
WILLIAMS, W. J. B., Holland Patent, N. Y.....1893

WILSON, KARL DENE, Industry, Pa.....1899
WILSON, SIDNEY S., 904 B. St., S. W., Washington, D. C.....1895
WINSLOW, Miss SOPHY, Shore Road and 88th St., Bay Ridge, Brooklyn, N. Y.....1899
WOOD, NELSON R., Smithsonian Institution, Washington, D. C.....1895
WOODRUFF, EDWARD SEYMOUR, 14 E. 68th St., New York City.....1899
WOODRUFF, LEWIS B., 14 East 68th St., New York City.....1886
WOODWORTH, Mrs. NELLY HART, 41 Bank St., St. Albans, Vt.....1894
WORCESTER, Prof. DEAN C., 525 Elm St., Ann Arbor, Mich.....1895
WORTHEN, CHARLES K., Warsaw, Ill.....1891
WORTHINGTON, WILLIS W., Shelter Island, Suffolk Co., N. Y.....1889
WRIGHT, FRANK S., 51 Genesee St., Auburn, N. Y.....1894
WRIGHT, Mrs. MABEL OSGOOD, Fairfield, Conn.....1895
WRIGHT, Miss NORA GIRALDA, 387 Plainfield St., Olneyville, R. I...1896
WRIGHT, SAMUEL, Conshohocken, Pa.....1895
YORKE, Dr. F. HENRY, Foosland, Ill.....1891
YOUNG, CURTIS CLAY, 395 Clermont Ave., Brooklyn, N. Y.....1891

DECEASED MEMBERS.

ACTIVE MEMBERS.

Date of Death.

BAIRD, SPENCER FULLERTON.....Aug. 19, 1887
BENDIRE, CHARLES E.....Feb. 4, 1897
COUES, ELLIOTT.....Dec. 25, 1899
GOSS, N. S.....March 10, 1891
HOLDER, JOSEPH B.....Feb. 28, 1888
JEFFRIES, JOHN AMORY.....March 26, 1892
WHEATON, JOHN M.....Jan. 28, 1887

HONORARY MEMBERS.

BURMEISTER, HERMANN.....May 1, 1892
GÄTKE, HEINRICH.....Jan. 1, 1897
GUNDLACH, JUAN.....March 14, 1896
GURNEY, JOHN HENRY.....April 20, 1890
HUXLEY, THOMAS H.....June 29, 1895
KRAUS, FERDINAND.....Sept. 15, 1890
LAWRENCE, GEORGE N.....Jan. 17, 1895
PARKER, WILLIAM KITCHEN.....July 3, 1890
PELZELN, AUGUST VON.....Sept. 2, 1891
SALVIN, OSBERT.....June 1, 1898
SCHLEGEL, HERMANN.....Jan. 17, 1884
SEEBOHM, HENRY.....Nov. 26, 1895
TACZANOWSKI, LADISLAS.....Jan. 17, 1896

Corresponding Members.

Baldamus, Eduard.....Oct. 30, 1893
Blakiston, Thomas W.....Oct. 15, 1891
Bogdanow, Modest N.....March 4, 1888
Cordeaux, John.....Aug. 1, 1899
Haast, Julius von.....Aug. 15, 1887
Hargitt, Edward.....March 19, 1895
Homeyer, E. F. von.....May 31, 1889
Lyttleton, Thomas, Lord Lilford.....June 17, 1896
Marschall, A. F.....Oct. 11, 1887
Malmgren, Anders Johan.....April 12, 1897
Middendorff, Alexander Theodor von.....Jan. 28, 1894
Mosjisovics, F. G. Hermann August.....Aug. 27, 1897
Prejevalski, N. M.....Oct. 20, 1887
Prentiss, D. Webster.....Nov. 19, 1899
Pryer, Harry James Stovin.....Feb. 17, 1888
Schrenck, Leopold von.....Jan. 20, 1894
Severtzow, N.....Feb. 8, 1885
Stevenson, Henry.....Aug. 18, 1888
Wharton, Henry T.....Sept. —, 1895

Associate Members.

Adams, Charles F.....May 20, 1893
Allen, Charles Slover.....Oct. 15, 1893
Atkins, H. A.....May 19, 1885
Avery, William Cushman.....March 11, 1894
Baur, George.....June 25, 1898
Beckham, Charles Wickliffe.....June 8, 1888
Bill, Charles.....April —, 1897
Bolles, Frank.....Jan. 10, 1894
Breese, William L.....Dec. 7, 1889
Brokaw, L. W.....Sept. 3, 1897
Cairns, John S.....June 10, 1895
Campbell, Robert Argyll.....April —, 1897
Colburn, W. W.....Oct. 17, 1899
Corning, Erastus, Jr.....April 9, 1893
Coe, W. W.....April 26, 1885
Elliott, S. Lowell.....Feb. 11, 1889
Fairbanks, Franklin.....April 24, 1895
Fowler, Major J. L.....July 11, 1899
Gesner, A. H.....April 30, 1895
Goss, Benjamin F.....July 6, 1893
Hatch, Jesse Maurice.....May 1, 1898

HOADLEY, FREDERIC H.....Feb. 26, 1895
HOWLAND, JOHN SNOWDON.....Sept. 19, 1885
INGERSOLL, JOSEPH CARLETON.....Oct. 2, 1898
JENKS, JOHN W. P.....Sept. 27, 1894
JOUY, PIERRE LOUIS.....March 22, 1894
KUMLIEN, THURE.....Aug. 5, 1888
LAWRENCE, ROBERT HOE.....April 27, 1897
LINDEN, CHARLES.....Feb. 3, 1888
MABBETT, GIDEON.....Aug. 15, 1890
MARCY, OLIVER.....March 19, 1899
MARIS, WILLARD LORRAINE.....Dec. 11, 1895
MINOT, HENRY DAVIS.....Nov. 13, 1890
NICHOLS, HOWARD GARDNER.....June 23, 1896
NORTHROP, JOHN I.....June 26, 1891
PARK, AUSTIN F.....Sept. 22, 1893
RAGSDALE, GEO. H.....March 25, 1895
RICHARDSON, JENNESS.....June 24, 1893
SLATER, JAMES H.....Feb. —, 1895
SMALL, EDGAR A.....April 24, 1884
SMITH, CLARENCE ALBERT.....May 6, 1896
STOWE, W. H.....March —, 1895
THORNE, PLATTE M.....March 16, 1897
THURBER, E. C.....Sept. 6, 1896
VENNOR, HENRY G.....June 8, 1884
WILLARD, SAMUEL WELLS.....May 24, 1887
WOOD, WILLIAM.....Aug. 9, 1885